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"HITEX"

**HIGH TECHNOLOGY EXPERIMENTAL
FORCES PROJECT CONCEPT
BRIEFING**

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Summary description of new experimental approaches to using low cost and/or high technology systems to restructure U.S. Army and U.S. Air Force tactical units. A wide range of experimental force concepts are described for use in the NATO theater, or in related high intensity combat zones such as the Middle East. A separate analysis is also provided of how the management of experimental force concept research can be improved, of suitable criteria to be met for project funding, and of problems in past research approaches.		

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"HITEX"

HIGH TECHNOLOGY EXPERIMENTAL FORCES

A PROJECT CONCEPT PAPER

Anthony H. Cordesman
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SUMMARY

- o Resource constraints and technological sophistication are creating new priorities for a searching look at the value of experimental force concepts. There is a high priority for innovations which can reduce the cost of military forces and improve their effectiveness.
- o Changing technology is also altering a rationale on which current force structures, and roles and missions, are based. Experimental forces must examine new missions and force structures as well as ways to improve current mission capabilities.
- o Imbalances in NATO capabilities -- coupled to the possibility of force reductions -- create special requirements for new approaches to force concepts. So does the increasing rate of arms and technology transfer to third world countries.
- o Many useful experimental force concepts use existing technology or weapon systems. These concepts do not, however, seem capable of meeting the challenge of future technological innovation or of coping with the overall resource pressures on force size.
- o What seems required is an integration of new tactical force concepts, new technology, and force-wide planning. Only through such integration does it seem possible to provide a capability to increase effectiveness without increasing force costs or to achieve substantial savings in manpower, support, and/or heavy equipment.
- o The term "HITEX," or high technology experimental forces, has been coined to apply to such forces, and to a project concept for improving the planning of such force designs.
- o A HITEX project would have the following objectives:
 - Examine current and developing experimental force concepts for tactical land, air, and amphibious/assault forces.
 - Examine new weapons systems and technology for use by such forces.
 - Develop analytic models to explore the force-wide value of different concepts and technology, and major trade-offs in cost-effectiveness or force requirements.

- Identify promising mixes of experimental force concepts and new technology, analyze their value, and suggest possible field testing methods.
- o The goal would not be to develop a single experimental force concept, or to fix upon a given range of concepts at a single point in time. The purpose of the project would rather be to provide an on-going examination of new alternatives while steadily improving the methodology for determining their relative value and effectiveness.
- o The value of these concepts would be examined in "force on force" terms, as well as in a chosen tactical mission. Their "life cycle" would also be studied. A major objective would be to develop a range of options which could deal with force-wide needs for tactical innovation and with force-wide resource constraints.
- o Initially at least, the project would examine a wide range of specialized areas. Priority would be given to:
 - New armor/anti-armor forces.
 - New indirect fire and air support forces.
 - High mobility/high firepower forces.
 - New air defense forces.
 - New defense concepts for the Center Region of NATO.
 - New concepts for the support of third world forces.
- o Emphasis would be given in all stages to an inter-Agency approach. Maximum use would be made of concepts being developed by the Services, by various schools, by individual military officers and on an IRID basis.
- o Much of the effort would be directed towards improving the exchange of information, towards common study and workshop efforts with the Services and towards exploring shared or rationalized approaches with our Allies.

I. INTRODUCTION

There is a continuing need to explore new force concepts and the role new technology, new tactics and new force structures can play in making military power cheaper and more effective. The U.S. now faces pressures, however, which give such innovation a special priority. These pressures are summarized in Table One below:

TABLE ONE

NEW PRIORITIES FOR EXPERIMENTAL FORCE CONCEPTS

- o Defense Research Constraints.
- o Growing Technological Sophistication.
- o Changing Roles and Missions.
- o Imbalances in NATO capabilities.
- o Increases in Third World Armaments and Technology.

Each of these pressures acts as a driving force in shaping future force plans, and the technology to support them:

A. RESOURCE PRESSURES

The U.S. and its Allies face growing resource pressures on their ability to maintain suitable tactical forces. These pressures include the steadily rising real cost of military manpower, of equipment, of training, and of operations and maintenance. They are also the result of the steadily more complex technology that tactical forces must operate. This new technology generally requires more training, more skilled manpower, more R&D and procurement expenditure, and more operations and maintenance effort.

B. TECHNOLOGICAL SOPHISTICATION

At the same time, advances in technology create new opportunities for, and demands upon, tactical forces.

TABLE TWO

TECHNOLOGY PRESSURES FOR CHANGE IN TACTICAL FORCES

- o Improved range, accuracy, and lethality of virtually all types of tactical weapons.
- o Improved avionics, fire control, and data processing systems.
- o Real time targeting, intelligence, and recce systems and sensors.
- o Improved land and air system armor, vulnerable area design, countermeasure defenses, etc.
- o System netting and integration technology for C³, force management, and allocation, and intelligence utilization.
- o Improved engineering, support, and supply equipment and systems.
- o Improved tactical and strategic mobility systems.

PGMs, ATGMs, SAMs, RPVs, CLGP, and HOWLS are concrete examples of such systems. These acronyms, however, are only symbols of the general pressure for change that technology is putting on tactical forces.

C. CHANGING ROLES AND MISSIONS

Together, the twin pressures of rising costs and technological change create a new for new and more efficient solutions to the ways in which forces should be structured to use this new technology. The new capabilities technology provides are, however, also changing the boundaries between existing roles and missions.

TABLE THREE

THE IMPACT OF ADVANCED TECHNOLOGY IN CHANGING TACTICAL ROLES AND MISSIONS

- New guidance systems, target location systems, and added range give artillery and missiles the capability to strike with direct fire accuracy far behind the FEBA.
- New infantry weaponry gives lightly equipped forces the capability to duel with heavy attacking armor.
- More accurate and lethal air launched weaponry and SSMs allow tactical forces to strike selectively at the entire range of tactical forces from the FEBA to LOC points and build-up points far to the rear.

- Combinations of strategic airlift, helicopters, and advanced amphibious assault technology are changing build-up capabilities and tactical mobility. Coupled with new tactical air targeting technology and weapons systems they create the potential for new mixes of dispersed forces and porous combat.
- Systems such as RPVs provide both land and air forces with a common capability to improve their reconnaissance and strike capability by an order of magnitude.
- New mine systems, sensors, and sensor weapons, combined with improved shelter technology, create new opportunities for land and air supported barrier systems.
- Improved gun and missile technology, coupled to new guidance systems, may soon allow the development of weapons which combine direct and indirect fire, anti-armor capability, and anti-air capability into common weapon systems.
- The war in the air has become a complex mix of new air-to-air, surface-to-air, electronic warfare, and AC&W capabilities.
- Improved conventional munitions, low yield nuclear weapons, special purpose weapons, and improved guidance and targeting are steadily blurring the distinction between conventional and tactical nuclear warfare in terms of its comparative damage effects. Other improvements in technology are blurring the distinction between tactical and strategic nuclear systems.
- Electronic warfare, emitter locators, new C³ systems, new intelligence systems, and computerized planning systems create the possibility to net much of this tactical technology together in ways where it is almost impossible to anticipate how the role of given systems would change dynamically in war.

Each year moves U.S. and Allied Forces further away from the levels of capability that constrained them in past combat. Each year also creates new threat challenges to their capabilities, and complex new relationships between the technology held by both sides and their force structures.

D. THE PROBLEM OF NATO

NATO presents a special challenge for the development of new force concepts. While the current balance of conventional and nuclear capabilities can be argued, there is no question that the Warsaw Pact is the most sophisticated tactical threat that the U.S. and its Allies now face. Further, there is broad agreement that the Pact has succeeded in developing a major numerical superiority in artillery, tanks, and land forces combat numbers.

NATO is also the area where resource pressures seem sharpest on the U.S. and its Allies, and where it is becoming most difficult to maintain suitable numbers of trained manpower. Further, for a variety of reasons, NATO faces the prospects of significant force cuts over the next decade. Even if these cuts are mutual and balanced, NATO will not be able to match Soviet reinforcement capability, and will lack the force density to cover the front using existing force structures and technology.

D. THIRD WORLD ARMS AND TRANSFERS

At the same time third world countries are rapidly increasing its weight of advanced technology. Iran now has more medium tanks than any of our NATO allies or non-Soviet Warsaw Pact country. It may soon acquire an equal superiority in fighter aircraft. Other Middle Eastern powers number their tank strength in the thousands, and jet fighter strength in the hundreds, and are acquiring large numbers of SSMs and SAMs. Similar trends are emerging in Asia, and to a lesser extent in Africa and South America.

Such trends will increasingly limit U.S. ability to use its tactical forces throughout the world unless the U.S. can find new systems and organizational concepts which will overcome the growing weight of major arms in foreign forces. The U.S. and its Western Allies have traditionally been able to achieve an effectiveness disproportionate to force numbers by superior organization, tactics, and equipment. Such superiority, however, depends upon constant innovation.

II. "HIGHTEX" -- HIGH TECHNOLOGY EXPERIMENTAL FORCES

Many of the proponents of various experimental force concepts tailor their ideas to a given tactical mission or to a given weapons system or technology. Some concepts depend on existing technology. The nature of the pressures for change just outlined, however, raises serious doubts about the value of single mission or existing technology solutions:

TABLE FOUR

LIMITS ON THE VALUE OF SINGLE MISSION OR EXISTING TECHNOLOGY EXPERIMENTAL FORCE CONCEPTS

- o Single mission solution generally have only a limited impact on either the overall balance of force capabilities or resource pressures.
- o Fixes in single mission areas can generally be countered by increases in threat forces in the same mission area even without new threat technology or force organization.

- o Reliance on existing technology makes the new force concept vulnerable to relatively low cost long or short term countermeasures. The rationale behind the new force concept may quickly become outdated.
- o The pressures for change listed in Table Two are force-wide, not limited to a single tactical mission like anti-armor warfare.
- o Most existing tactical weapons systems fall far short of the potential technology offers for both improved capability and lower force costs.
- o There is no way of predicting or controlling the rate of innovation in threat technology and force structures.
- o Forces take time to change or "convert" to new force structures. Short term solutions may solve an immediate problem, but not be implementable within the time required to make them cost-effective.
- o Any change in a given tactical capability impacts on other associated capabilities. Rigid suboptimization may create problems for other parts of the force structure while solving them for a selected mission.

It is easy enough to talk about bureaucratic obstruction and military conservatism. One of the main reasons that force concepts evolve slowly, however, is that they often stop their development at the point where they simply are not practical. They focus on the benefit of the concept without regard to its cost, or leave the concept in a form where its value has too short a life or too limited an impact to justify a major effort to change force plans.

A. "HITEX" FORCES

Accordingly, any project focusing on experimental forces must take account of the fact that existing tactical forces are already high technology forces, and of the scale and pace of the change going in tactical technology. It must take into account the need to solve force-wide problems or at least offer a net balance of advantages in force-wide terms. And, it must contribute to long term solutions to the problem of resource pressures. No partial solution has value if the U.S. and its Allies still cannot maintain their commitments.

This means the focus must be on High Technology Experimental forces, and such "HITEX" forces must have the characteristics shown in Table Five below:

TABLE FIVE

REQUIRED CHARACTERISTICS OF HIGH TECHNOLOGY EXPERIMENTAL OR "HITEX" FORCES

- o Use developing or advanced technology.
- o Solve tactical problem, or improve tactical capability, in force-wide terms.
- o Produce a sustained improvement in force capability that justifies the process of conversion.
- o Provide improved capability in a range of contingencies, not simply the contingency the force is designed to meet.
- o Offer significant solutions to the problem of force-wide resource constraints.
- o Remain viable in spite of foreseeable threat countermeasures or force improvements.
- o Be a sufficiently broad improvement effort, or part of a range of efforts, to produce an effective and fundable future tactical force structure to meet U.S. commitments.

There are some important qualifications, however, which must be added to these requirements.

B. "HIGH TECHNOLOGY"

First, "high technology" does not necessarily mean large equipment, complex systems, or high cost technology. It means taking advantage of the state-of-the-art and facing the reality of how complex the threat is that new force concepts must meet. This integration of tactics, technology, and force structures may result in infantry equipped with light low cost mobility systems and inexpensive advanced anti-tank rocket launchers. It may also result in extremely costly complex systems to combine recce, targeting, force allocation, strike, and damage assessment capabilities into a single net. It may involve a new mix of both. It is the quality of the integration between technology and the force concept that counts.

The diversity of the technology involved is illustrated in Table Six below:

TABLE SIX

EXAMPLES OF POTENTIAL HITEX TECHNOLOGY

- o Light, highly mobile, scout vehicles equipped with improved anti-tank weapons for fluid of dispersed area anti-armor defense.
- o Remotely piloted vehicles for long range strike capability, stand-off air attack capability, targeting, real-time reconnaissance, or long range tank killing.
- o Advanced man portable rocket launchers for high firepower attacks on personnel built-up areas.
- o Netted sensor systems for real time intelligence, targeting, and firepower or force allocation.
- o Real time damage assessment systems for force wide casualty and damage analysis in conventional and TNW attacks, and force allocation or attack response option management.
- o Emitter locator-identifier-targeter-strike allocation systems.
- o Combined anti-tank, anti-air defense weapons systems.
- o Force-wide night, poor visibility, and poor weather warfare systems.
- o Porous battlefield defense netting systems.
- o Hostile weapons location systems to provide a "direct fire" targeting capability to indirect fire systems.
- o Recce-target acquisition-air control-PGM guidance systems to improve aircraft or helicopter tank killing capability.

Some of this technology costs thousands of dollars. Other elements cost billions. Some requires extremely sophisticated systems. Other types can be used by lightly equipped infantry. Some is currently under development. Others are only concepts. All are legitimate options for HIGHTEX forces.

C. FORCE-WIDE REQUIREMENTS AND SUB-OPTIMIZATION

Second, the need to consider HITEX forces in terms of their "force-on-force" effect does not mean that any research effort can credibly begin or end with force-wide solutions. It will be necessary to suboptimize on given major missions or requirements, and to seek partial solutions to force-wide problems.

The point is that the overall demand of force planning cannot be ignored for the immediate and specific tactical objective.

D. THERE IS NO STOPPING POINT; NO LONG TERM SOLUTION

Finally, there is no stopping point or long term solution to the development of HITEX forces. Innovation in tactical technology will have extremely destabilizing effect on any current concept, as will the complex changes taking place in defense costs. The most that planners can hope for are experimental force concepts that offer the decision maker credible options within a given life cycle.

It will be difficult to foresee what this life cycle may be. Threat or potential threat countries will always retain the option of forcing the pace for change. Regardless of improvements in analytical methodology, there will always be major areas of uncertainty in our ability to forecast future requirements. The U.S. also has no monopoly on innovation. The interaction between friendly and threat force changes, and the rate of progress in countermeasure capability, cannot be anticipated.

Even as one set of HITEX concepts becomes a series of practical force options for the force planner, there will be a need for next generation or alternative solutions. This is a painful reality. It robs many "fixes" or "solutions" of the glamour and impact they might have had in slower changing eras. It is, however, an unavoidable reality, and it means a HITEX project must pursue different paths or options on a continuing basis.

III. IMPLEMENTING THE "HIGHTEX" CONCEPT

The technological and resource pressures identified earlier have already produced many new force concepts. In fact, the deployment of ATGMs and the possibility of MBFR have led to almost as many new force concepts as there have been studies of either topic, and these studies number in the hundreds.

Ideas, however, are only the starting point. They must be supported by convincing analysis and field tests. They require detailed cost analysis, and detailed study of the new training and O&M burdens they impose. They require modification to meet the comments and criticism of military planners who will not initially be advocates, but who must implement such innovations.

A HITEX project should, therefore, both support the development of HITEX concepts and begin their transformation into force planning options. It must also avoid the trap of suboptimizing in a single mission area or on a single technology, and it must accept the need to sponsor a continuing effort.

TABLE SEVEN

PRINCIPLE APPROACHES TO DEVELOPING "HITEX" FORCES

- Survey current and developing force concepts for tactical land, air, and amphibious forces.
- Survey new weapons systems and technology for use in such forces.
- Provide a forum for the exchange of ideas, outside review, and informed criticism.
- Fund research into promising concepts and technology.
- Stimulate research in areas where current progress seems to be lacking or into the consideration of new technologies and roles and missions.
- Develop analytic models and methodology capable of exploring the value of different concepts and technology, and of studying trade-offs in cost-effectiveness or force requirements.
- Assist in the development of suitable field testing plans for promising HITEX concepts.

A. SURVEY CURRENT AND DEVELOPING FORCE CONCEPTS

There is an obvious need to not "reinvent the wheel," but it also seems useful to start bringing various concepts together simply to make it possible to study the range of concepts available. There now seems to be too little communication of such concepts even within the branches of a given Service, and there is an obvious need for the technologist to be able to examine future concepts as well as the military planner. Such a survey effort might take the form of a volume containing a summary of different concepts. This could be kept up to date by circulating addendums and occasional revisions of the summary.

B. SURVEY NEW WEAPONS SYSTEMS AND TECHNOLOGY

A similar effort is required to make the force planner or tactician more familiar with the capabilities of new technology, and to provide a compact picture of the full range of options available. One key task will be to ensure that new technology is described in terms of its possible applications as soon as possible. It will also be essential to ensure that the value of such a survey is not lost by failing to update it, or maintain it as a continuing project

C. PROVIDE A FORUM FOR EXCHANGE OF IDEAS, OUTSIDE REVIEW,
AND INFORMED CRITICISM

A better and continuing forum is needed for the discussion of HITEX concepts. One way to achieve this would be a series of workshops focused on given tactical areas that would allow new ideas to be presented, permit an exchange of ideas, and provide increased contact between the innovator technologists, and the force planner. Another is a "HITEX" bulletin that could ensure a suitable circulation of ideas, and that new concepts or technology -- and responding comments and criticism -- had wide exposure. Publications like the U.S.A.F. "TAB" have shown how valuable such documentation can be, particularly when classified material can be included and the analysis can move from the general idea to the use of specific intelligence and force data.

D. FUND RESEARCH

It is unclear whether it is possible to buy innovation, but it should be possible to buy implementation. It also seems fair to assume that the Services, contractors, and defense analysts already generate far more ideas that any HITEX project could fully analyze, much less turn into practical options. Accordingly, the criteria in Table Seven seems one way of ensuring maximum payoff in what still will be high risk research.

TABLE EIGHT

CRITERIA FOR FUNDING "HITEX" RESEARCH

- o Existence of a well defined concept or technology whose promise can be demonstrated through a detailed initial study, and which has already been subjected to at least initial critical review.
- o A credible probability that the concept is important enough, and well structured enough, to meet the general requirements for HITEX forces outlined in Table Four.
- o Presentation of a detailed research or analytic program whose output is a practical force planning option for decision makers.
- o Existence of documented support within OSD or the Services for the research project.
- o Use of advanced technology and new tactical roles and missions.
- o Existence of sufficient supporting analysis to demonstrate the concept has force-wide value, and seems cost-effective.

Maximum emphasis should also be placed on an initial independent effort or common funding. One test of the faith anyone places in a HITEX concept, is his organization or firm's willingness to pay half or more of the cost of making it practical.

E. STIMULATE RESEARCH

There are, however, certain to be gaps in the process of innovation. One example of this is that most HITEX concepts now seem to focus on existing tactical missions and on missions involving combat systems. Far less attention is paid to new roles and missions or to concepts for support forces, training, headquarters units, etc.

The best way to stimulate such innovation may be to identify a gap, get a consensus from DoD planners that it is important; and make it clear that funding will be available to turn a good concept initiative into practical options. As noted earlier, it does not seem likely that funding exploratory research or thinking would payoff, and it might well end up locking scarce funds into "soft" or "shot gun" studies which never end in options for decision making. It definitely seems worthwhile, however, to provide incentives for successful innovation and to identify new requirements.

F. DEVELOP ANALYTIC MODELS AND METHODOLOGY

It does seem worth funding a significant effort to find better tools for analyzing HITEX options, and evaluating their cost-effectiveness and trade-off value.

This seems to be particularly true of combined arms or theater-wide models since current analytic tools seem weakest precisely in the areas most necessary to examine new mixes of roles and missions or justify the force-wide value of new concepts.

It also seems likely that it is only through combined arms or theater level modeling that analysis can avoid ending up (a) justifying the concept because a new model to evaluate it is built up around the mission it is intended to perform, or (b) killing the concept because the model used to evaluate it is insensitive to much of its value. Improve HITEX force analysis methodology has a high and immediate priority.

G. ASSIST IN THE DEVELOPMENT OF SUITABLE FIELD TESTING

Major improvements have already taken place in U.S. and Allied capabilities to field test HITEX concepts, and major new tests and exercises are now underway. The fact remains that the results of these tests, and the capability of new facilities, receive too little circulation and publicity. At the same time, additional tests could be carried out by combat or other active forces if they had analytic assistance in designing suitable tests.

And, existing test facilities are sometimes used in ways which do not fully examine the full combined arms context of the concept tested or its force-wide implications. HIGHTEX should encourage an expansion of the current effort, provide support to forces in the field, and encourage broader combined arms approaches.

IV. PRIORITIES FOR "HITEX" CONCEPTS

It is too early to develop any firm priorities for HIGHTEX concepts or options. This will require both broad discussion with DoD, and a more comprehensive survey of what has already been done and is underway. Table Eight list some illustrative priorities as a basis for further discussions.

TABLE NINE

PRIORITY REQUIREMENTS FOR "HITEX" CONCEPTS

- o ARMOR/ANTI-ARMOR FORCES: Lower cost, lower manpower, and more lethal forces capable of offsetting the Warsaw Pact superiority in medium tanks, and countering a third world country armed attack.
- o INDIRECT FIRE/AIR SUPPORT SYSTEMS: Concepts capable of integrating improved targeting, PGM capabilities, improved mine systems, and improved C³ systems into a more effective and lower cost overall force mix.
- o HIGH MOBILITY/HIGH FIREPOWER FORCES: Forces which have a minimal tail, minimal sea or airlift burden, an amphibious assault option, and still retain the fighting capability to reinforce NATO or third world allies defending against an attacker with modern air, artillery, and armor.
- o NEW AIR DEFENSE SYSTEMS: Concepts capable of netting SAMs, AA, fighters, electronic warfare, passive defense, RPVs C³ system into lower cost and less vulnerable forces which get maximum effectiveness from the new technology available.
- o NATO MBFR FORCES: Concepts which can counteract the effect of force reductions in terms of both initial defense and reinforcement capability.
- o THIRD WORLD FORCES: Concepts which both enable our third world allies to cope with new technology and the increase capability of threat powers, and which increase interoperability with U.S. Forces.

V. THE NEED FOR A COMMON APPROACH

Much of the effectiveness of such a HITEX project will depend upon the degree to which the Army, Air Force, and Marine Corps participate and show an interest in its results. This is partly the result of the fact that most of the new force concepts involved are certain to come from the Services as well as much of the advanced technology. It is partly the result of the fact that it is only Service experts who can help transform a bright idea into a practical option. And, it is partly the result of the fact that few force planners are likely to buy any idea "cold;" they have to participate in its development to have any faith in its value.

Similar participation is needed from OSD and OJCS. As noted earlier, HITEX concepts have to be realistic in force-wide terms, and have to meet the test of being practical options for programming into the FYDP. It is unrealistic to assume that HITEX options will be accepted, even if they have Service support, if they are formulated without regard to POM issues, OSD policy and funding constraints, or OJCS priorities.

Such participation may be hard to develop, and may depend upon the quality of the initial HITEX effort. It is, however, a critical element in transforming technology and tactical concepts into force plans. Workshops and the circulation of reports and briefings are a starting point in getting suitable participation. It would be much more valuable, however, to seek some kind of joint review of direction of the project from the start. Similarly, it would be of major value to determine common priorities for HITEX concepts and to give these emphasis in initial studies, research, and analysis.

"HITEX"

**HIGH TECHNOLOGY EXPERIMENTAL
FORCES**

PROJECT CONCEPT BRIEFING

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NEW PRIORITIES FOR EXPERIMENTAL FORCE CONCEPTS

- **DEFENSE RESOURCE AND MANPOWER
CONSTRAINTS**
- **GROWING TECHNOLOGICAL SOPHISTICATION**
- **CHANGING ROLES AND MISSIONS**
- **IMBALANCES IN NATO/WARSAW PACT
CAPABILITIES**
- **INCREASES IN THIRD WORLD ARMAMENTS
AND TECHNOLOGY**

EXAMPLES OF POTENTIAL "HITEX TECHNOLOGY

PART ONE

- LIGHT, HIGHLY MOBILE, SCOUT VEHICLES EQUIPPED WITH IMPROVED ANTI-TANK WEAPONS FOR FLUID OR DISPERSED AREA ANTI-ARMOR DEFENSE
- REMOTELY PILOTED VEHICLES FOR LONG RANGE STRIKE CAPABILITY, STAND-OFF AIR ATTACK CAPABILITY, TARGETING, REAL-TIME RECONNAISSANCE, OR LONG RANGE TANK KILLING
- ADVANCED MAN PORTABLE ROCKET AND MISSILE LAUNCHERS FOR HIGH FIRE-POWER ATTACKS ON PERSONNEL IN BUILT-UP AREAS
- NETTED SENSOR SYSTEMS FOR REAL TIME INTELLIGENCE, TARGETING, AND FIRE-POWER OR FORCE ALLOCATION
- REAL TIME DAMAGE ASSESSMENT SYSTEMS FOR FORCE WIDE CASUALTY AND DAMAGE ANALYSIS IN CONVENTIONAL AND TNW ATTACKS, AND FORCE ALLOCATION OR ATTACK RESPONSE OPTION MANAGEMENT
- EMITTER LOCATOR-IDENTIFIER-TARGETER-STRIKE ALLOCATION SYSTEMS

EXAMPLES OF POTENTIAL "HITEX" TECHNOLOGY

PART TWO

- **COMBINED ANTI-TANK, ANTI-AIR DEFENSE WEAPONS SYSTEMS**
- **FORCE-WIDE NIGHT, POOR VISIBILITY, AND POOR WEATHER WARFARE SYSTEMS**
- **NETTED ELECTRONIC WARFARE-SAM CONTROL AC&W FIGHTER CONTROL SYSTEMS**
- **MULTIPLE ROCKET LAUNCHER AND SCATTERABLE MINE/SENSOR WEAPON
"BARRIERS" FOR DEFENSE AGAINST ARMOR**
- **HOSTILE WEAPONS LOCATION SYSTEMS TO PROVIDE A "DIRECT FIRE" TARGETING
CAPABILITY TO INDIRECT FIRE SYSTEMS**
- **RECCE-TARGET ACQUISITION-AIR CONTROL-PGM GUIDANCE SYSTEMS TO IMPROVE
AIRCRAFT OR HELICOPTER TANK KILLING CAPABILITY**

DEFINING THE "HIGH TECHNOLOGY" IN "HITEX"

- "HIGH TECHNOLOGY" DOES NOT NECESSARILY MEAN LARGE EQUIPMENT, COMPLEX SYSTEMS, OR HIGH COST TECHNOLOGY.
- MAXIMUM ATTENTION MUST BE GIVEN TO RESOURCE CONSTRAINTS. THE NEED IS FOR THE LEAST MANPOWER, O&M, AND TECHNOLOGY NECESSARY TO DO THE JOB.
- IT DOES MEAN TAKING ADVANTAGE OF THE STATE-OF-THE-ART AND FACING THE REALITY OF HOW COMPLEX THE THREAT IS THAT NEW FORCE CONCEPTS MUST MEET.
- THIS INTEGRATION OF TACTICS, TECHNOLOGY, AND FORCE STRUCTURES MAY RESULT IN INFANTRY EQUIPPED WITH LIGHT LOW COST MOBILITY SYSTEMS AND INEXPENSIVE ADVANCED ANTI-TANK ROCKET LAUNCHERS.
- ON THE OTHER HAND, IT MAY RESULT IN EXTREMELY COSTLY COMPLEX SYSTEMS TO COMBINE RECCE, TARGETING, FORCE ALLOCATION, STRIKE, AND DAMAGE ASSESSMENT CAPABILITIES INTO A SINGLE NET. IT MAY INVOLVE A NEW MIX OF BOTH.
- QUALITY OF THE INTEGRATION BETWEEN TECHNOLOGY AND THE FORCE CONCEPT THAT COUNTS.

THE IMPACT OF ADVANCED TECHNOLOGY IN CHANGING TACTICAL ROLES AND MISSIONS

PART ONE

- IMPROVED GUIDANCE, TARGET LOCATION, AND RANGE CAPABILITY GIVES CAPABILITY TO STRIKE WITH DIRECT FIRE ACCURACY FAR BEHIND FEBA
- NEW INFANTRY WEAPONRY GIVES LIGHTLY EQUIPPED FORCES THE CAPABILITY TO DUEL HEAVY ATTACKING ARMOR
- MORE ACCURATE AND LETHAL ASMS AND SSMS ALLOW SELECTIVE STRIKES AT THE ENTIRE RANGE OF TACTICAL FORCES FROM THE FEBA TO LOC AND BUILD-UP TARGETS FAR TO THE REAR
- Airlift, helicopter, and amphibious technology are changing build-up capabilities and tactical mobility
- New force management and weapons systems, create the potential for new mixes of dispersed forces and porous combat
- Systems like RPVS improve land and air force reconnaissance and strike capability

THE IMPACT OF ADVANCED TECHNOLOGY IN CHANGING TACTICAL ROLES AND MISSIONS

PART TWO

- NEW MINE SYSTEMS, SENSORS, AND SENSOR WEAPONS, COMBINED WITH IMPROVED SHELTER TECHNOLOGY, CREATE NEW LAND AND AIR SUPPORTED BARRIER OPTIONS
- IMPROVED GUN AND MISSILE TECHNOLOGY, COUPLED TO NEW GUIDANCE SYSTEMS, MAY SOON ALLOW THE DEVELOPMENT OF WEAPONS WHICH COMBINE DIRECT AND INDIRECT FIRE, ANTI-ARMOR CAPABILITY, AND ANTI-AIR CAPABILITY INTO COMMON WEAPON SYSTEMS
- AIR WAR BECOMING COMPLEX MIX OF NEW AIR-TO-AIR, SURFACE-TO-AIR, ELECTRONIC WARFARE, AND AC&W CAPABILITIES
- IMPROVED CONVENTIONAL MUNITIONS, LOW YIELD NUCLEAR WEAPONS, SPECIAL PURPOSE WEAPONS, AND IMPROVED GUIDANCE AND TARGETING BLUR DISTINCTION BETWEEN CONVENTIONAL AND TNW WARFARE
- ELECTRONIC WARFARE, EMITTER LOCATORS, NEW C³ SYSTEMS, NEW INTELLIGENCE SYSTEMS, AND COMPUTERIZED PLANNING SYSTEMS CREATE THE POSSIBILITY TO NET TACTICAL TECHNOLOGY IN WAYS WHICH CAN ALLOW SWITCHES IN ROLES AND MISSION TO MEET DAY TO DAY PRIORITIES OF GIVEN CONTINGENCY

LIMITS ON THE VALUE OF SINGLE MISSION OR EXISTING TECHNOLOGY EXPERIMENTAL FORCE CONCEPTS

PART ONE

- SINGLE MISSION SOLUTIONS HAVE ONLY A LIMITED IMPACT ON OVERALL BALANCE OF FORCE CAPABILITIES AND RESOURCE PRESSURES
- FIXES IN SINGLE MISSION AREAS CAN BE COUNTERED BY INCREASES IN THREAT FORCES IN THE SAME MISSION AREA WITHOUT NEW TECHNOLOGY OR FORCE ORGANIZATION
- USING EXISTING TECHNOLOGY MAKES THE NEW CONCEPT VULNERABLE TO LOW COST COUNTER-MEASURES. RATIONALE MAY QUICKLY BECOME OUTDATED
- THE PRESSURES FOR CHANGE ARE FORCE-WIDE; NOT LIMITED TO A SINGLE TACTICAL MISSION
- MOST EXISTING SYSTEMS FALL FAR SHORT OF THE POTENTIAL TECHNOLOGY OFFERS FOR IMPROVED CAPABILITY AND LOWER COSTS

LIMITS ON THE VALUE OF SINGLE MISSION OR EXISTING TECHNOLOGY EXPERIMENTAL FORCE CONCEPTS: PART TWO

- NO WAY TO PREDICT OR CONTROL RATE OF INNOVATION IN THREAT TECHNOLOGY AND FORCE STRUCTURES
- MOST SUCH CONCEPTS WORK ONLY IN A HIGHLY SELECTIVE SCENARIO OR CONTINGENCY — THE ONE FOR WHICH THEY ARE DESIGNED
- FORCES TAKE TIME TO CHANGE OR "CONVERT" TO NEW FORCE STRUCTURES. SHORT TERM SOLUTIONS MAY BE IMPLEMENTABLE IN TIME TO MAKE THEM COST-EFFECTIVE
- ANY CHANGE IN A GIVEN TACTICAL CAPABILITY IMPACT ON OTHER ASSOCIATED CAPABILITIES. SUBOPTIMISATION MAY CREATE PROBLEMS FOR OTHER PARTS OF THE FORCE STRUCTURE

FORCE-WIDE REQUIREMENTS AND SUB-OPTIMIZATION

- NEED TO CONSIDER HITEX FORCES IN TERMS OF THEIR "FORCE-ON-FORCE" EFFECT
- BUT, IT IS UNLIKELY THAT ANY RESEARCH EFFORT CAN CREDIBLY BEGIN OR END WITH FORCE-WIDE SOLUTIONS
- WILL BE NECESSARY TO SUBOPTIMIZE ON MAJOR MISSIONS OR REQUIREMENTS, AND TO SEEK PARTIAL SOLUTIONS TO FORCE-WIDE PROBLEMS
- POINT IS THAT THE OVERALL DEMANDS OF FORCE PLANNING CANNOT BE IGNORED FOR THE IMMEDIATE AND SPECIFIC TACTICAL OBJECTIVE

NATO PRESSURES AFFECTING THE NEED FOR "HITEX" FORCES

- MOST SOPHISTICATED TECHNOLOGICAL THREAT U.S. AND ALLIES FACE
- TNW CRITICAL PROBLEM
- WARSAW PACT SUPERIORITY IN ARTILLERY, TANK, AND MAJOR COMBAT UNIT NUMBERS
- AREA WHERE RESOURCE PRESSURES SHARPEST ON U.S. AND ALLIES
- CRITICAL QUALITY AND QUANTITY PROBLEM IN NUMBERS OF TRAINED MANPOWER
- RISK OF MBFR/UFR FORCE CUTS
- NATO CANNOT MATCH SOVIET BUILD-UP CAPABILITY
- LACK FORCE DENSITY TO COVER FRONT WITH EXISTING FORCES

THIRD WORLD FACTORS AFFECTING NEED FOR "HITEX" FORCES

- **TRANSFER OF ADVANCED FIGHTER, MISSILE, AND ARMOR WEAPONRY.**
- **NUCLEAR PROLIFERATION.**
- **FORCE BUILD-UPS AS RESULT OF CHRONIC CRISIS AND CONFLICT IN MIDDLE EAST, AFRICA, AND SEA.**
- **JUNTA EFFECT: MILITARY BUILD-UPS AS A RESULT OF INTERNAL CRISIS AND POLITICAL ISSUES.**
- **ALLIED NEED TO SELL TO THIRD WORLD COUNTRIES TO MAKE ARMS PRODUCTION COST-EFFECTIVE.**
- **SALES OF "SURPLUS" ARMS PHASED OUT OF NATO AND WARSAW PACT FORCES.**

PROBLEMS THE U.S. MUST MEET IN DEVELOPING "HITEX" CONCEPTS FOR THIRD WORLD

- **PROBLEM OF SCALE: THIRD WORLD ADVANCED WEAPONRY STEADILY GROWING IN PROPORTION TO U.S. FORCES ON GLOBAL BASIS.**
- **PROBLEM OF TIME AND STRATEGIC MOBILITY: ABILITY TO ACT QUICKLY BECOMES MORE AND MORE CRITICAL AS THIRD WORLD FORCES IMPROVE IN MOBILITY AND CAPABILITY TO RAPIDLY CONCENTRATE AND PENETRATE.**
- **"OVER-THE-BEACH" PROBLEM: HOW CAN U.S. AMPHIBIOUS ASSAULT FORCES COPE WITH GROWING SOPHISTICATION OF THIRD WORLD DEFENSES.**
- **"WHERE ARE THE BASES?" PROBLEM: LACK OF LAND BASES; VULNERABILITY OF CARRIERS.**
- **WHAT KIND OF AID PROBLEM: HOW CAN THE U.S. BEST ORGANIZE AND EQUIP THIRD WORLD ALLIES. HOW CAN THE U.S. BEST MINIMIZE THE NEED FOR U.S. FORCES**
- **OIL AND RESOURCES PROBLEM: WHAT SPECIAL HITEX OPTIONS ARE NEEDED TO HELP ASSURE RAW MATERIAL AVAILABILITY AND TRANSFER? SUBSTITUTE FOR SHORTAGES?**

PRIORITY REQUIREMENTS FOR "HITEX" CONCEPTS

- **ARMOR/ANTI-ARMOR FORCES**
- **INDIRECT FIRE/AIR SUPPORT SYSTEMS**
- **HIGH MOBILITY/HIGH FIREPOWER FORCES**
- **NEW AIR DEFENSE SYSTEMS**
- **NATO MBFR FORCES**
- **THIRD WORLD FORCES**

EXPLAINING "HITEX" PRIORITIES

PART ONE

- **ARMOR/ANTI-ARMOR FORCES:**

LOWER COST, LOWER MANPOWER, AND MORE LETHAL FORCES CAPABLE OF OFFSETTING THE WARSAW PACT SUPERIORITY IN MEDIUM TANKS, AND COUNTERING A THIRD WORLD COUNTRY ARMORED ATTACK

- **INDIRECT FIRE/AIR SUPPORT SYSTEMS:**

CONCEPTS CAPABLE OF INTEGRATING IMPROVED TARGETING, PGM CAPABILITIES, IMPROVED MINE SYSTEMS, AND IMPROVED C³ SYSTEMS INTO A MORE EFFECTIVE AND LOWER COST OVERALL FORCE MIX

- **HIGH MOBILITY/HIGH FIREPOWER FORCES:**

FORCES WHICH HAVE A MINIMAL TAIL, MINIMAL SEA OR AIRLIFT BURDEN, AN AMPHIBIOUS ASSAULT OPTION, AND STILL RETAIN THE FIGHTING CAPABILITY TO REINFORCE NATO OR THIRD WORLD ALLIES DEFENDING AGAINST AN ATTACKER WITH MODERN AIR, ARTILLERY, AND ARMOR

EXPLAINING "HITEX" PRIORITIES

PART TWO

- **NEW AIR DEFENSE SYSTEMS:**

CONCEPTS CAPABLE OF NETTING SAMs, AA, FIGHTERS, ELECTRONIC WARFARE, PASSIVE DEFENSES, RPVS C³ SYSTEM INTO LOWER COST AND LESS VULNERABLE FORCES WHICH GET MAXIMUM EFFECTIVENESS FROM THE NEW TECHNOLOGY AVAILABLE

- **NATO MBFR FORCES:**

CONCEPTS WHICH CAN COUNTERACT THE EFFECT OF FORCE REDUCTIONS IN TERMS OF BOTH INITIAL DEFENSE AND REINFORCEMENT CAPABILITY

- **THIRD WORLD FORCES:**

CONCEPTS WHICH BOTH ENABLE OUR THIRD WORLD ALLIES TO COPE WITH NEW TECHNOLOGY AND THE INCREASE CAPABILITY OF THREAT POWERS, AND WHICH INCREASE INTEROPERABILITY WITH U.S. FORCES

"HITEX"

"THE MAGIC THIRTY"

- 30% LESS MANPOWER
- 30% LESS CONSTANT DEFENSE RESOURCES
- 30% FEWER MAJOR WEAPONS SYSTEMS
- 30% MORE EFFECTIVE FORCE MANAGEMENT AND CONTROL
- 30% LESS O&M REQUIRED
- 30% LESS "TAIL" IN BOTH MAJOR UNITS AND REAR AREAS
- 30% FASTER MANEUVER AND MOVEMENT
- 30% LESS VULNERABLE
- 30% FASTER BUILD-UP
- 30% MORE ENDURANCE

REQUIRED CHARACTERISTICS OF HIGH TECHNOLOGY EXPERIMENTAL OR "HITEX" FORCES

- USE DEVELOPING OR ADVANCED TECHNOLOGY
- SOLVE TACTICAL PROBLEM, OR IMPROVE TACTICAL CAPABILITY, IN
FORCE-WIDE TERMS
- PRODUCE A SUSTAINED IMPROVEMENT IN FORCE CAPABILITY THAT
JUSTIFIES THE PROCESS OF CONVERSION
- PROVIDE IMPROVED CAPABILITY IN A RANGE OF CONTINGENCIES,
NOT SIMPLY THE CONTINGENCY THE FORCE IS DESIGNED TO MEET
- OFFER SIGNIFICANT SOLUTIONS TO THE PROBLEM OF FORCE-WIDE
RESOURCE AND MANPOWER CONSTRAINTS
- REMAIN VIABLE IN SPITE OF FORESEEABLE THREAT COUNTER-
MEASURES OR FORCE IMPROVEMENTS

THERE IS NO STOPPING POINT; NO LONG TERM SOLUTION

- THERE IS NO STOPPING POINT OR LONG TERM SOLUTION TO THE DEVELOPMENT OF HITEX FORCES
- INNOVATION IN TACTICAL TECHNOLOGY WILL HAVE EXTREMELY DESTABILIZING EFFECT ON ANY CURRENT CONCEPT, AS WILL THE COMPLEX CHANGES TAKING PLACE IN DEFENSE COSTS
- MOST THAT PLANNERS CAN HOPE FOR ARE EXPERIMENTAL FORCE CONCEPTS THAT OFFER THE DECISION MAKER CREDIBLE OPTION WITHIN A GIVEN LIFE CYCLE. IT WILL BE DIFFICULT TO FORESEE WHAT THIS LIFE CYCLE MAY BE
- THREAT OR POTENTIAL THREAT COUNTRIES WILL ALWAYS RETAIN THE OPTION OF FORCING THE PACE FOR CHANGE
- REGARDLESS OF IMPROVEMENTS IN ANALYTIC METHODOLOGY, THERE WILL ALWAYS BE MAJOR AREAS OF UNCERTAINTY IN OUR ABILITY TO FORECAST FUTURE REQUIREMENTS
- THE U.S. HAS NO MONOPOLY ON INNOVATION
- THE INTERACTION BETWEEN FRIENDLY AND THREAT FORCE CHANGES, AND THE RATE OF PROGRESS IN COUNTERMEASURE CAPABILITY CANNOT BE ANTICIPATED

THE NEED FOR A COMMON APPROACH

- **JOINT EFFORT WITH THE SERVICES**
 - MUCH OF EFFECTIVENESS WILL DEPEND UPON ARMY, AIR FORCE, NAVY, AND MARINE CORPS PARTICIPATION
 - MANY NEW FORCE CONCEPTS AND TECHNOLOGIES ORIGINATE IN SERVICES
 - REQUIRE SERVICE EXPERTISE AND FIELD TESTS TO TRANSFORM "BRIGHT IDEAS" INTO PRACTICAL OPTIONS
- **COMBINING TECHNOLOGY AND FORCE PLANNING**
 - FEW FORCE PLANNERS ARE LIKELY TO BUY ANY IDEA "COLD"; THEY HAVE TO PARTICIPATE IN ITS DEVELOPMENT TO HAVE ANY FAITH IN ITS VALUE
 - PARTICIPATION IS NEEDED FROM OSD AND OJCS. HAVE TO MEET THE TEST OF BEING PRACTICAL OPTIONS FOR PROGRAMMING INTO THE FYDP
 - UNREALISTIC TO ASSUME HITEX OPTIONS WILL BE ACCEPTED, EVEN IF THEY HAVE SERVICE SUPPORT, IF FORMULATED WITHOUT REGARD TO POM ISSUES, OSD POLICY AND FUNDING CONSTRAINTS, OR OJCS PRIORITIES

PRINCIPAL APPROACHES TO DEVELOPING "HITEX" FORCES

- SURVEY CURRENT AND DEVELOPING FORCE CONCEPTS FOR TACTICAL LAND, AIR, AND AMPHIBIOUS FORCES.
- SURVEY NEW WEAPONS SYSTEMS AND TECHNOLOGY FOR USE IN SUCH FORCES.
- PROVIDE A MULTI SERVICE COMBINED ARMS FORUM FOR THE EXCHANGE OF IDEAS, OUTSIDE REVIEW, AND INFORMED CRITICISM.
- FUND RESEARCH INTO PROMISING CONCEPTS AND TECHNOLOGY.
- STIMULATE RESEARCH IN AREAS WHERE CURRENT PROGRESS SEEMS TO BE LACKING OR INTO THE CONSIDERATION OF NEW TECHNOLOGIES AND ROLES AND MISSIONS.
- DEVELOP ANALYTIC MODELS AND METHODOLOGY CAPABLE OF EXPLORING THE VALUE OF DIFFERENT CONCEPTS AND TECHNOLOGY, AND OF STUDYING TRADE-OFFS IN COST-EFFECTIVENESS OR FORCE REQUIREMENTS.
- ASSIST IN THE DEVELOPMENT OF SUITABLE FIELD TESTING PLANS FOR PROMISING "HITEX" CONCEPTS.

19 AUGUST, 1974

"HITEX" ILLUSTRATIVE FORCE CONCEPTS

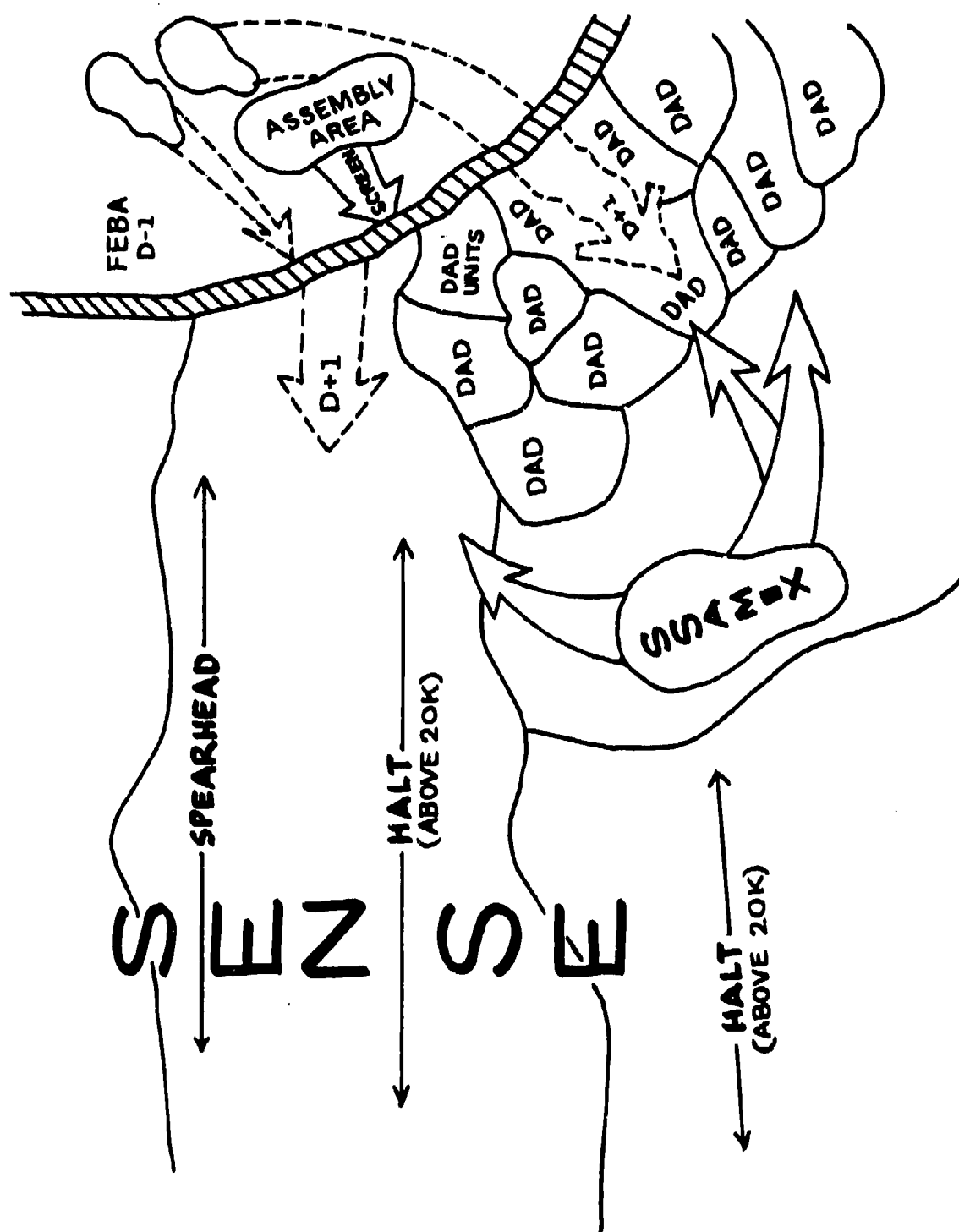
**ANTHONY H. CORDESMAN
202-694-3611**

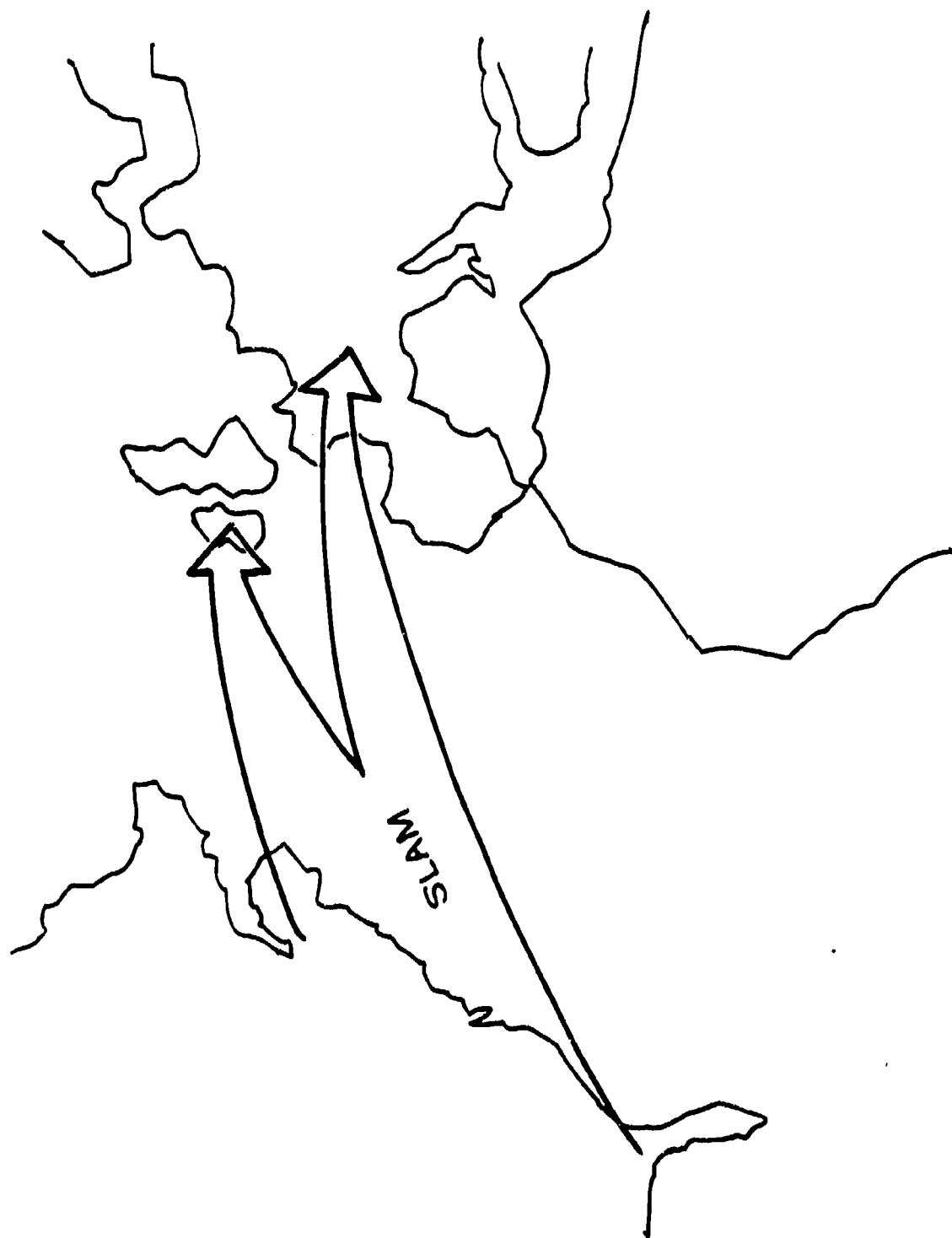
PURPOSE OF ILLUSTRATIVE CONCEPTS

- **GIVE "HITEX" TANGIBLE MEANING AND FORM**
- **ILLUSTRATE HOW MUCH ADVANCED TECHNOLOGY COULD DO IN "FORCE WIDE" CONTEXT. USE NATO AS STARTING POINT**
- **SHOW CONCEPTS MAY HAVE VALUE WHICH CUT ACROSS SERVICE, BRANCH, WEAPONS SYSTEM, AND ROLE AND MISSION BOUNDARIES**
- **ILLUSTRATE WAY FULL RANGE OF FORCES AND RESOURCES MUST BE CONSIDERED**
- **GIVE EXAMPLES OF DETAILED ISSUES AND PROBLEMS "HITEX" MUST ADDRESS**
- **SHOW "RADICAL" IDEAS MAY BE OF SIGNIFICANT INTEREST**

TITLES OF ILLUSTRATIVE "HITEX" FORCE CONCEPTS

DAD	— DISPERSED AREA DEFENSE FORCES
SSAM-X	— ADVANCED ANTI-ARMOR, ANTI-AIR GROUND FORCE
SPEARHEAD	— LONG RANGE AIR AND MISSILE TNW AND CONVENTIONAL STRIKE FORCE
HALT	— ADVANCED THEATER DEFENSE AGAINST AIR AND MISSILE ATTACKS
SENSE	— THEATER FORCE ALLOCATION AND MANAGEMENT SYSTEM
SLAM	— ADVANCED REINFORCEMENT, SUPPORT, AND SUPPLY SYSTEM





ILLUSTRATIVE FORCE-WIDE INTERACTIONS BETWEEN "HITEX" FORCES

TITLE	DESCRIPTION	INTERACTION
DADS	HIGH KILL CAPABILITY DISPERSED AREA DEFENSE "INFANTRY."	PROVIDES SCREENING DEFENSE, DEFENSE IN DEPTH, MOBILE DISPERSED ATTACK CAPABILITY
SSAM-X	HIGH FIRE POWER FORCE WITH SSAM-X, ATAADS, MTAADS, ADVANCED ARMOR, AND ATTACK HELICOPTERS	PROVIDES HEAVILY EQUIPPED COUNTER ATTACK AND BREAKTHROUGH STOPPING FORCE
SPEARHEAD	ADVANCED ATTACK AIR UNITS USING A-10s, ATTACK HELICOPTERS, AND OTHER FIGHTERS WITH PGMs, AND RPVs	PROVIDES THEATER WIDE REINFORCEMENT AND MOBILITY AGAINST ENEMY SPEARHEADS FROM SHELTERED OR DISPERSED BASES
SLAM	CONUS TO FRONT BUILD-UP, REPLACEMENT AND SUPPLY SYSTEM INTEGRATING LAND, AIR, AND NAVAL FORCES AND TECHNOLOGY	PROVIDES SUSTAINING AND REINFORCEMENT CAPABILITY FOR IN THEATER FORCES
SENSE	ADVANCED TECHNOLOGY, HOWLS, DAMAGE ASSESSMENT, INTELLIGENCE SYSTEMS, FORCE ALLOCATION SYSTEMS, DAMAGE ASSESSMENT SYSTEMS, EW, AND C ³ SYSTEMS	PROVIDES CAPABILITY TO NET CONVENTIONAL AND "HITEX" FORCES INTO AN EFFECTIVE FORCE MANAGEMENT SYSTEM
HALT	ADVANCED FIGHTERS, LONG RANGE SAMs, EMITTER LOCATORS, AIR BASE STRIKE SSAMs, ANTI-SAM MISSILES, AC&W, AND EW SYSTEMS	PROVIDES LONG RANGE AIR AND SSAM DEFENSE AND PARTIAL INTEGRATION OF DISPERSED AIR DEFENSE SYSTEMS

DECENTRALIZED AREA DEFENSE

D A D

DECENTRALIZED AREA DEFENSE



DEVELOPING TECHNOLOGIES

- EMITTER LOCATION
- SMART MUNITIONS

SIGNATURES OF CONVENTIONAL FORCES

- RADARS
- RADIOS
- ACOUSTIC
- IR

- VANS
- TRUCKS
- TANKS
- APCs

WHAT MUST BE DONE

- REDUCE SIGNATURE
- ELIMINATE SIGNATURE

POSSIBLE ALTERNATIVES

- \$ - ECM, ECCM, ECC, CM
- SPOOFING DECOYS
- AGILE, MOBILE, HOSTILE FORCES
- DISCIPLINE/PROCEDURES

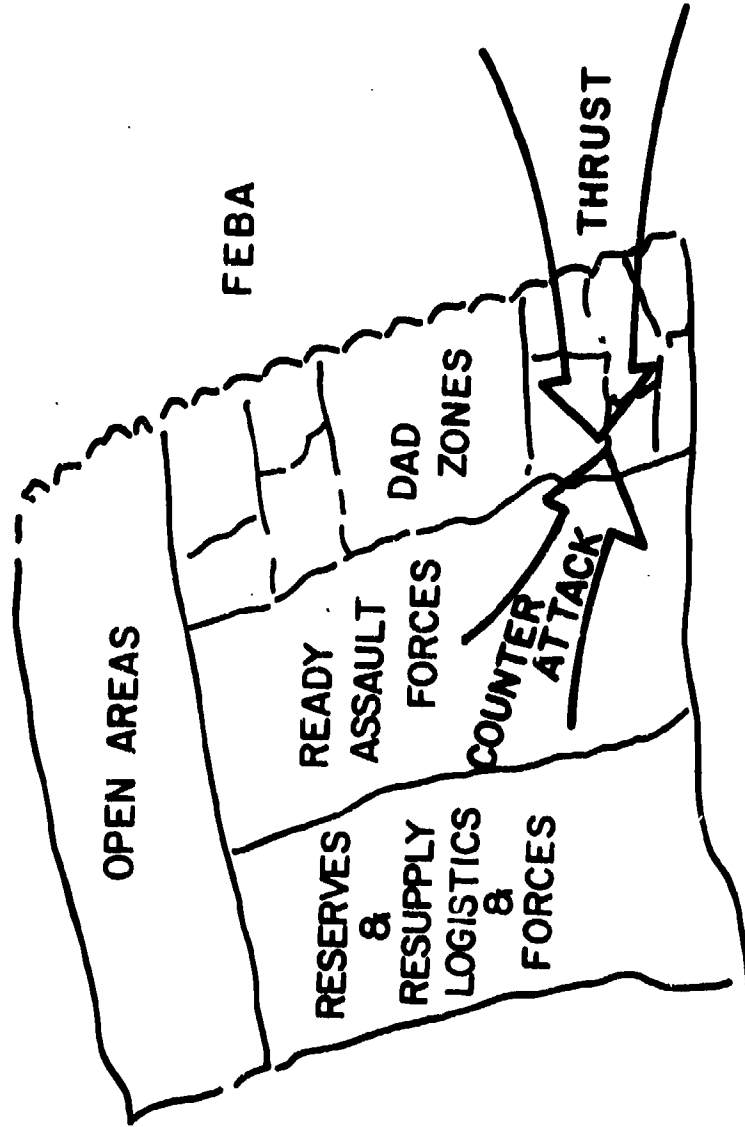
ADVANTAGES OF DAD UNITS

- LOW SIGNATURES
- SIMPLE ADVANCED TECHNOLOGIES
- DISTRIBUTED FIRE POWER
 - ARMOR ATTRITION
 - HIGH DENSITY
 - LOW UNIT COST
- HIT/RUN TACTICS
- MINIMUM OF C³
- SMALL LOGISTICS TAIL

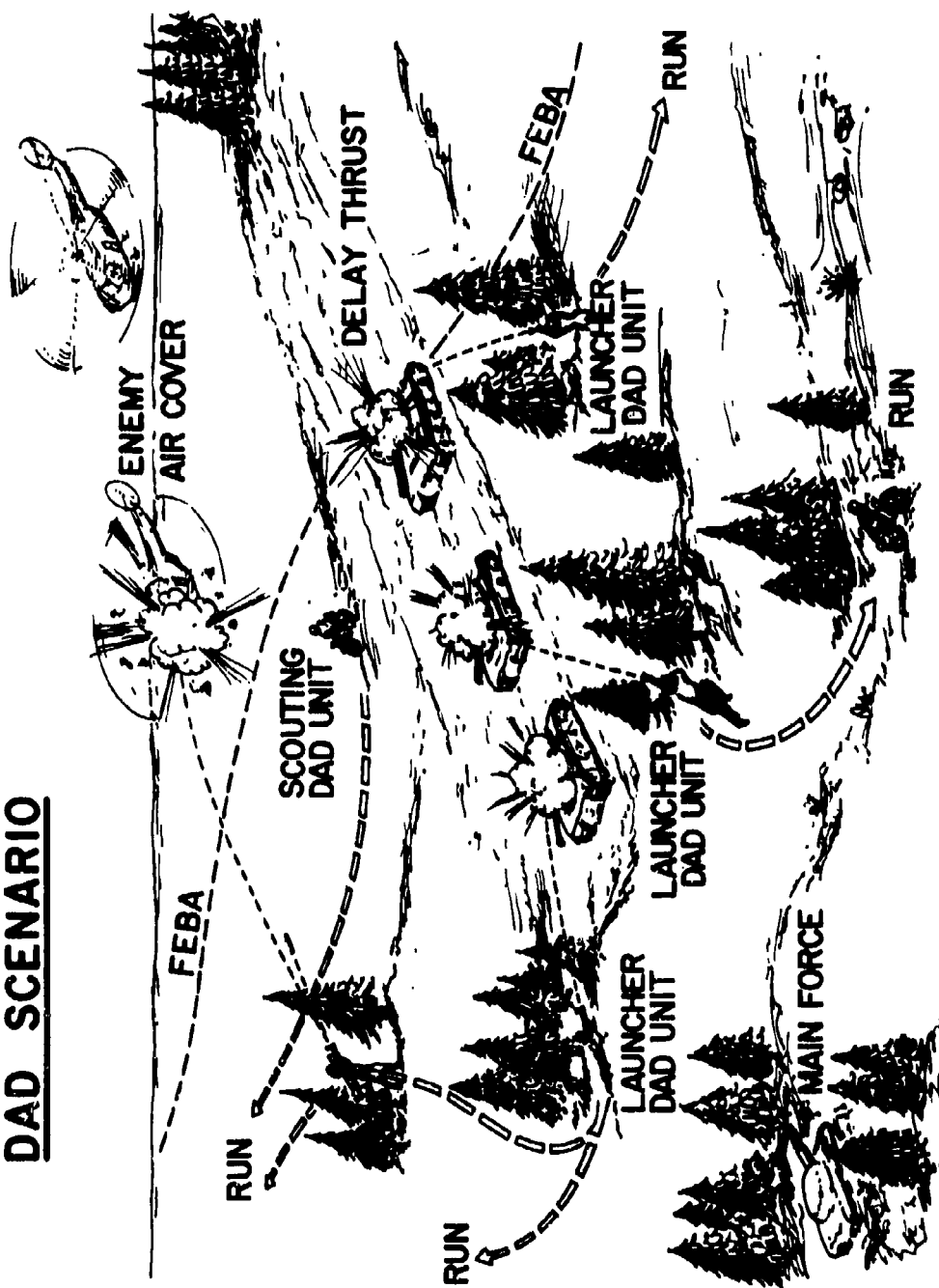
FORCE CHARACTERISTICS

- INFANTRYMAN WEAPONS
 - ANTI-ARMOR
 - ANTI-PERSONNEL
 - LOW SIGNATURES
- C³ - PLARS
- EMPHASIZE DOCTRINE AND TACTICS
- INITIATIVE OF SMALL UNIT COMMANDER

EMPLOYMENT CONCEPT



DAD SCENARIO



TYPICAL ENGAGEMENT SITE



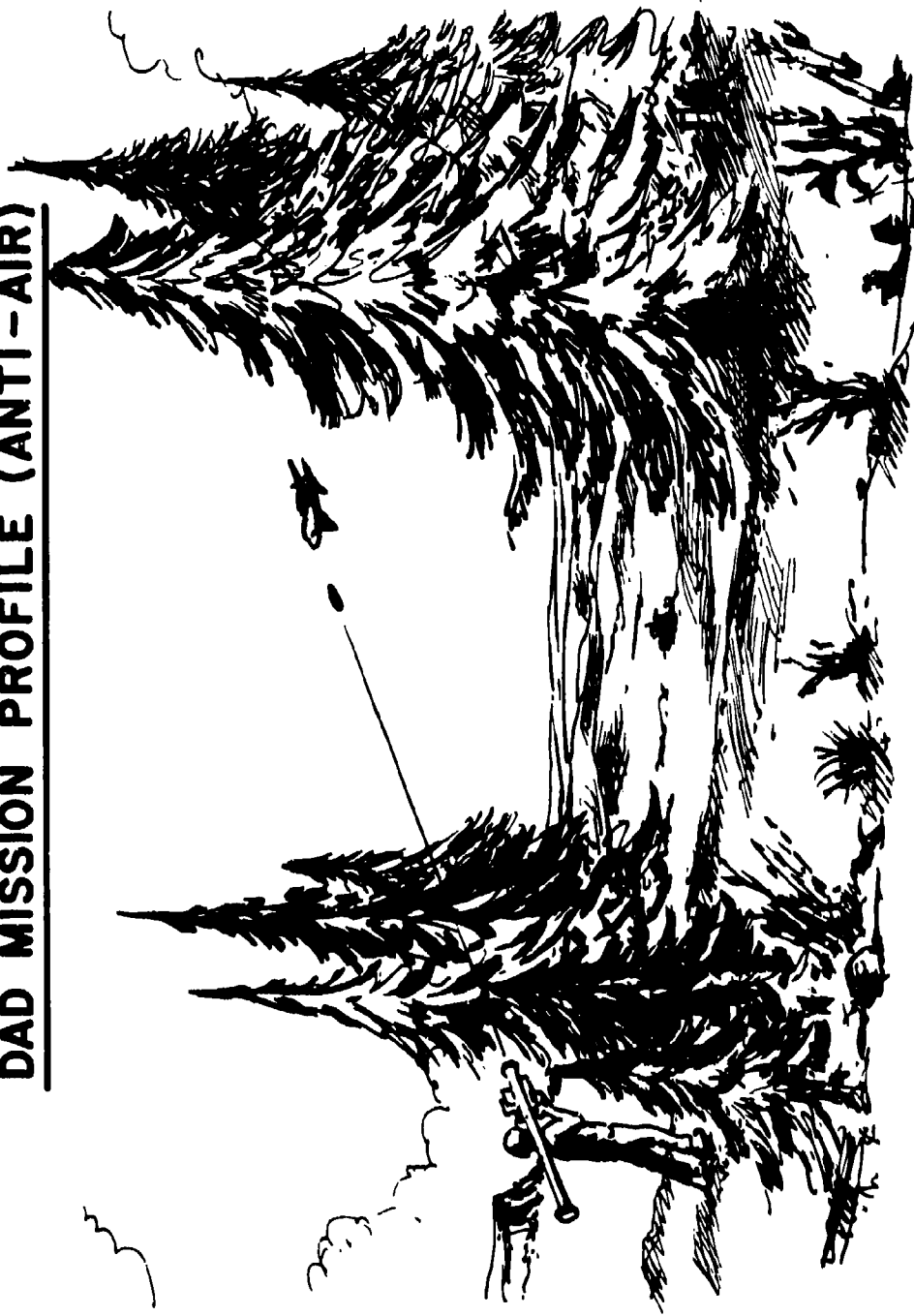
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DAD OBJECTIVES/MISSIONS

- ZONE/AREA DEFENSE
- ARMOR ATTRITION IN DEPTH
- DELAY, CHANNELIZE ENEMY THRUSTS
- FORWARD SCREENING, RECONNAISSANCE, OBSERVATION
- CONVENTIONAL FORCE AUGMENTATION
- CATALYST TO HOME DEFENSE FORCES

A-306-3-73-00820)

DAD MISSION PROFILE (ANTI-AIR)



A-346-3-73-00 84(4)

AIRBORNE OPTION



POSSIBLE DISADVANTAGES

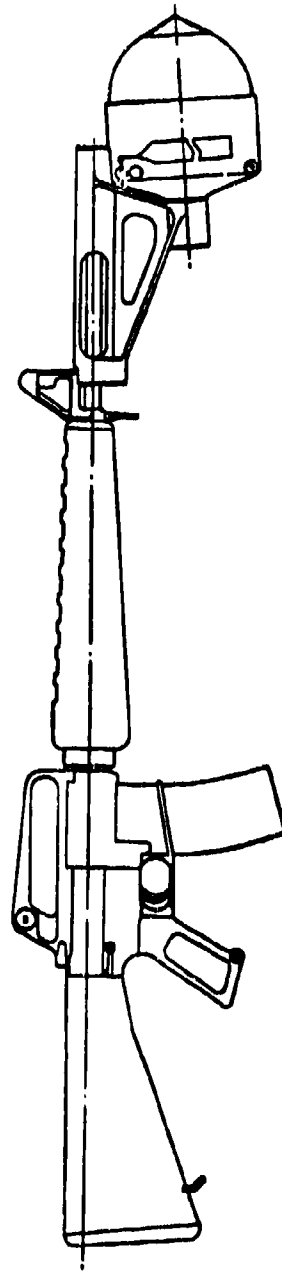
- COMMAND AND CONTROL
- SURVIVABILITY
- RECOVERABILITY
- LIMITED MISSIONS
- LIMITED SCENARIOS
- TRAINING: BECOME FAMILIAR WITH
ZONES DURING PEACE TIME?

TECHNOLOGY ISSUES - FIREPOWER

- RAW
- RAMPS
- STINGER
- AATADS

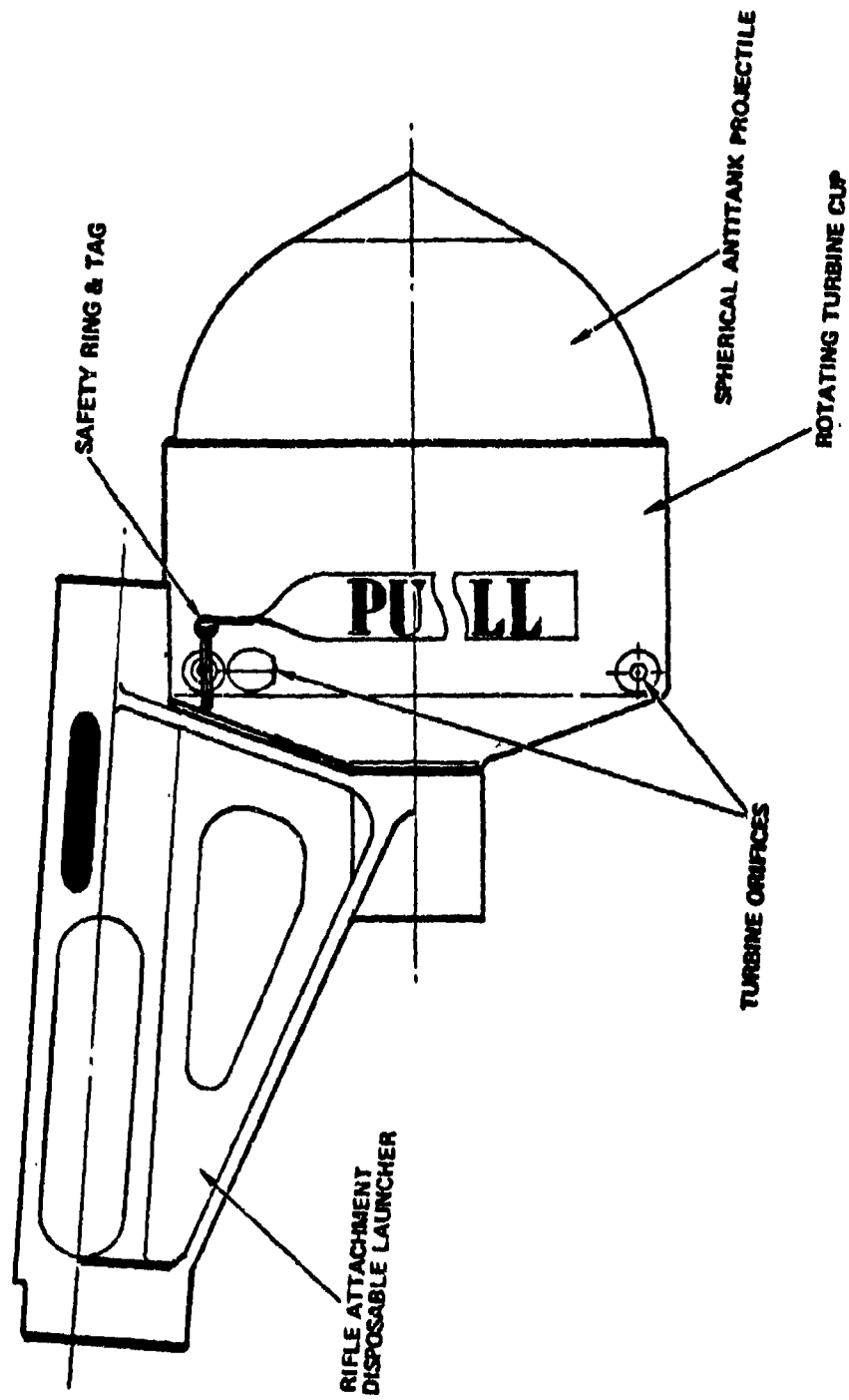
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RAW CONCEPT

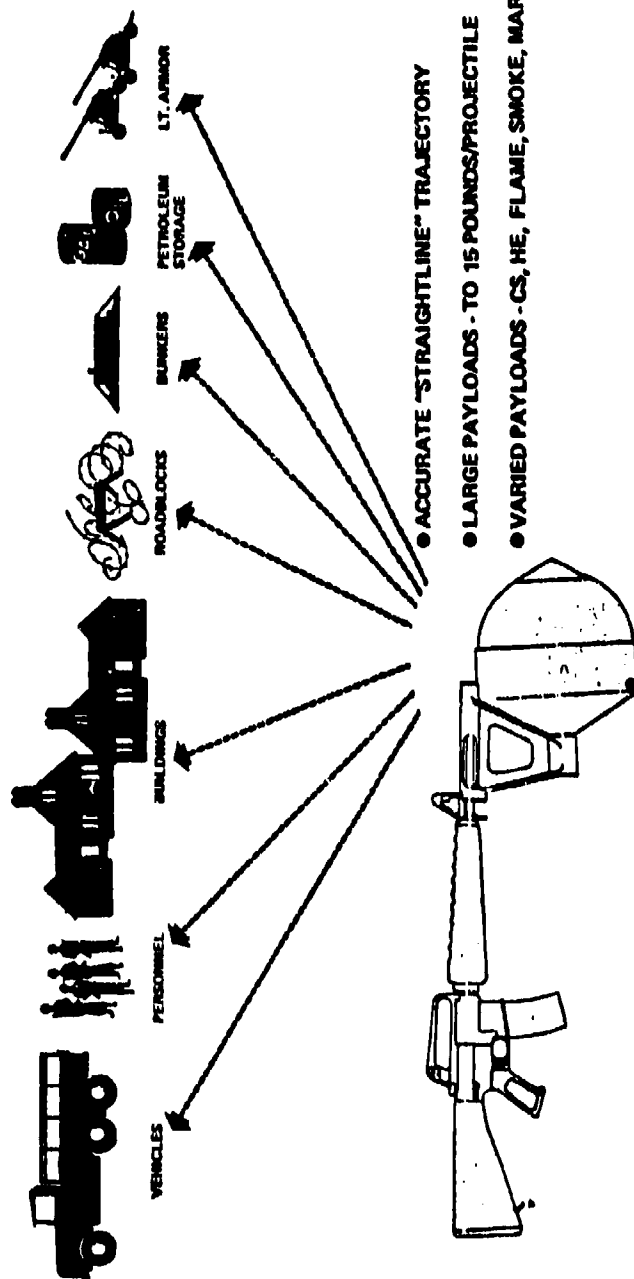


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RAW CONFIGURATION



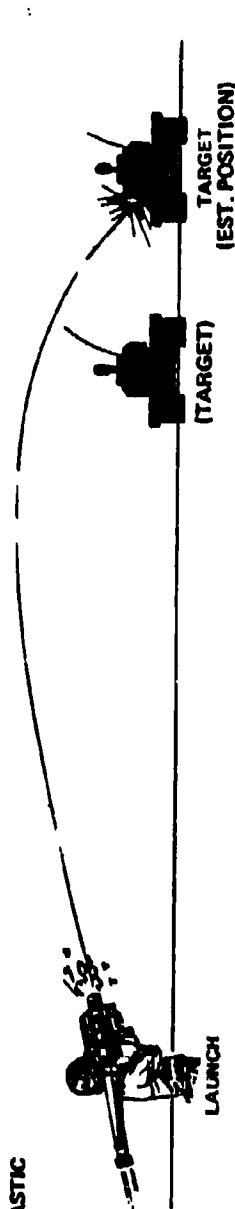
RAW TARGET ARRAY



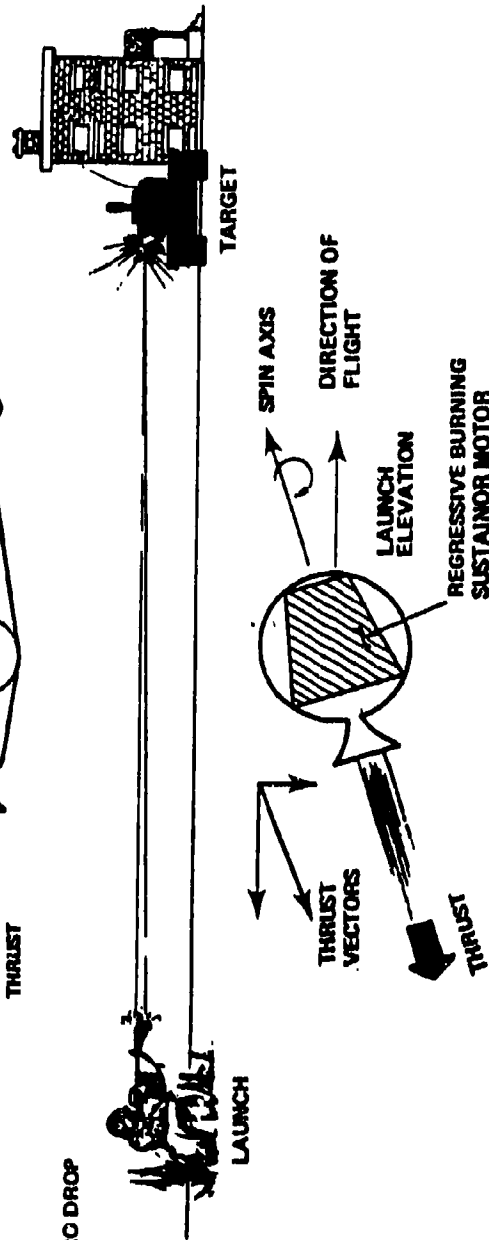
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RAW DIRECT / INDIRECT FIRE

BALLASTIC

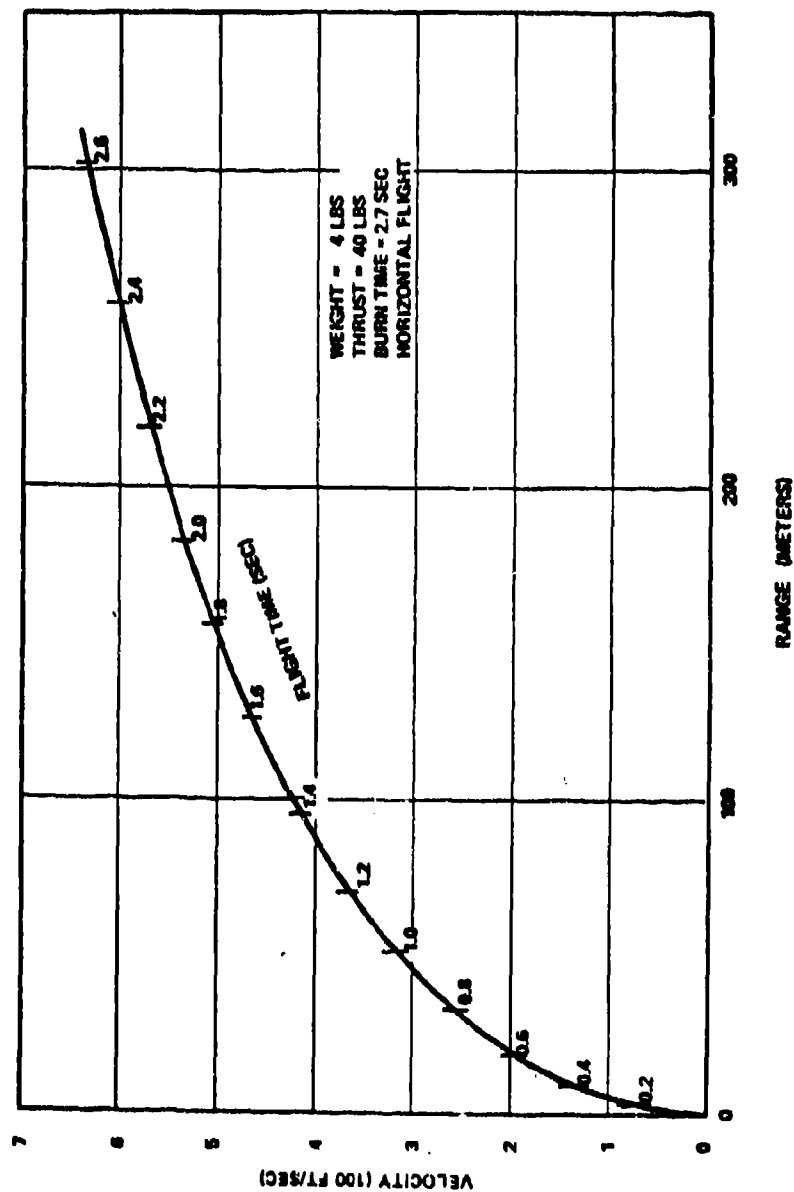


ZERO DROP



4-306-2-73-0008(2)

RAW VELOCITY, RANGE PROFILE



RAMPS - ATTRIBUTES

- SAFE ARMING
- CLOSED BREACH LAUNCH
- RADIAL PROGRESSIVE BURN
- INHERENT RELIABILITY

TENTATIVE RAMPS PARAMETERS

WEAPON

CALIBER - 50 MM

WARHEAD - DUAL PURPOSE, 1.2 LBS.

FUZE - M-550

LAUNCH WEIGHT - 2 LBS.

STABILITY - AERO/GYRO, FIN PLUS SPIN

APPROXIMATE VELOCITIES -

- Launch - 275 ft/sec
- Boost - 325 ft/sec
- Total - 600 ft/sec

LAUNCHER

TYPE - FOLDING TRIPOD, SPIKE LAUNCHER

FIRING MODES - DIRECT/INDIRECT

WEIGHT - 12 LBS. to 15 LBS.

RAMPS PERFORMANCE

POINT TARGETS

- MOVING - 50 TO 300 METERS IN RANGE
- FIXED - 50 TO 1000 METERS IN RANGE

AREA TARGETS

- 100 TO 2000 METERS IN RANGE

ANGLE OF FIRE

- LOW - 0° TO 20° FOR 100 TO 1600 METERS
- HIGH -
 - High Drag - 80° to 45° - 300 to 1100 Meters in Range
 - Low Drag - 80° to 45° - 700 to 2000 Meters in Range

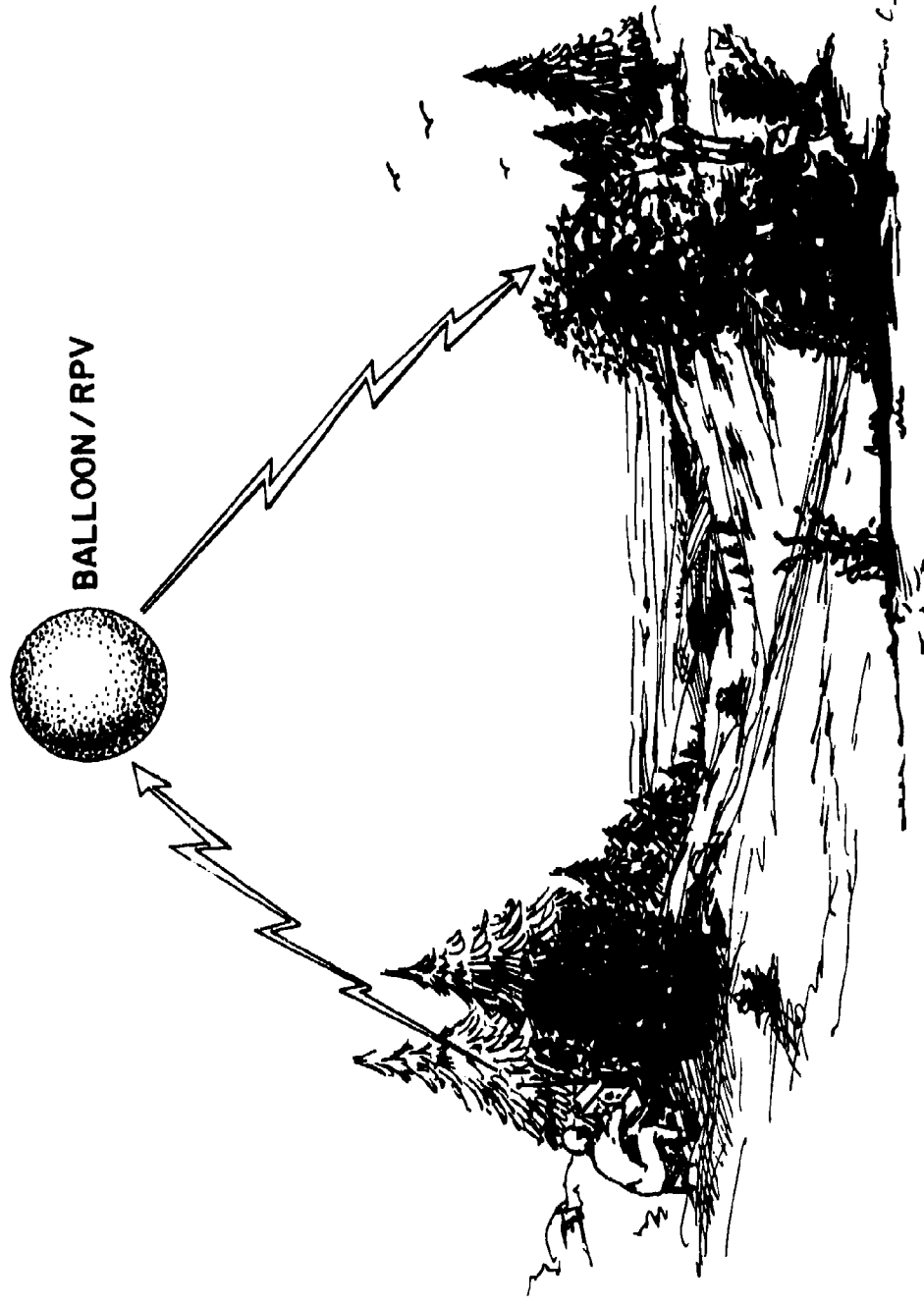
DISPERSION

- DIRECT FIRE - + 1 MILS (AZ); + 2.5 MILS (EL)
- INDIRECT FIRE - + 2.5 MILS (AZ); + 8 MILS (RNG.)

TECHNOLOGY ISSUES - COMMUNICATIONS

- POSITION, LOCATION AND REPORTING SYSTEM (PLARS)
- COVERT INTRA-UNIT

PLARS CONCEPT



A-306-3-73-0091 (✓)

DAD MISSION - SCATTERABLE MINES



TECHNOLOGY ISSUES - MOBILITY

- ARMY'S OFF-ROAD VEHICLE
- TRAIL BIKE
- DUNE BUGGIES

TECHNOLOGY ISSUES - LOGISTICS

- SPACE AGE
 - FOOD
 - CLOTHING
 - SHELTER
- SUPERMARKET RESUPPLY
- PARAWING GLIDE DELIVERY OF CRITICAL ITEMS
- MINIMUM AMMO ISSUE

QUESTIONS TO BE ADDRESSED

- IS CONCEPT VIABLE?
 - .. MISSIONS?
 - .. SCENARIOS?
- HOW MIGHT ENEMY COUNTER?
- WHAT ARE C³ REQUIREMENTS?
- WHAT ARE LOGISTIC SUPPORT REQ'TS?
- HOW WOULD UNITS AUGMENT/MESH
WITH MAIN FORCES? - WITH HOME UNITS?
- COSTS: MANPOWER AND MATERIAL?

SSAM - X

**"HITEX" FORCE TO PROVIDE COUNTER
ATTACK AND COUNTER BREAKTHROUGH
CAPABILITY**

"SSAM - X": AN ILLUSTRATIVE "HITEX" CONCEPT

- INTENDED ONLY AS AN ILLUSTRATION OF WHAT TECHNOLOGY CAN DO.
- DESIGN AS "MODULAR" FORCE TO ALLOW TAILORING TO SPECIFIC MISSION, AND MIX IN DIFFERENT STRENGTHS WITH OTHER "HITEX" FORCES LIKE "DAD."
- KEY MISSION AREA IS NATO.
- DESIGN FOR POST UFR/MBFR ENVIRONMENT.
- DESIGN FOR DUAL CAPABILITY IN CONVENTIONAL AND TACTICAL NUCLEAR WAR.
- DESIGN FOR MULTIPLE CONTINGENCIES, ESCALATION CONTROL, AND INTRA-WAR DETERRENCE.
- BUILD AROUND TECHNOLOGY NOW UNDER DEVELOPMENT.

D-2

SSAM - X: TACTICAL MISSION

- PROVIDES MAXIMUM FIRE POWER, AND ANTI-ARMOR CAPABILITY. ALLOWS CONCENTRATION OF MAXIMUM FIRE-POWER FOR COUNTER-ATTACK AND COUNTER BREAK THROUGH MISSIONS.
- TNW AND CONVENTIONAL LONG RANGE (50KM+) STRIKE CAPABILITY.
- USE IN NON-NATO MULTI-MISSION TNW EXPEDITIONARY FORCES.
- USE IN NATO MISSIONS IN SUPPORT OF REGULAR DEFENDING FORCES. USE IN INTER-ACTION WITH "SPEARHEAD," "HALT," AND "DAD" FORCES.
- USE IN STRATEGIC LIFT OR REINFORCEMENT MISSIONS TO SUPPORT U.S. OR ALLIED FORCES WHICH MAY HAVE SUFFERED CRITICAL ATTRITION OR BE FACED WITH SUPERIOR ATTACKING FORCES.

SSAM - X: CHARACTERISTICS NECESSARY TO MEET MISSION

- **PROVIDE MAXIMUM MANEUVER AND KILLING CAPABILITY IN BOTH CONVENTIONAL AND TNW COMBAT.**

- **PROVIDE LOW VULNERABILITY, AND HIGH SELF DEFENSE CAPABILITY.**

- **PROVIDE MULTI-MISSION CAPABILITY IN:**

AIR DEFENSE

TNW SSM ROLE

TACTICAL MISSILE DEFENSES

CONVENTIONAL SSM ROLE

- **MINIMIZE MANPOWER, O&M, AND SUPPLY BURDEN.**

- **OPERATE IN UNIT MODE ALLOWING RAPID CHANGE OF ROLE ON BATTLEFIELD.**

OPERATE IN SUPPORT OF REGULAR DIVISIONS IN STATIC FEBA OR DYNAMIC FEBA.

OPERATE LINKED TO TACFIRE, TABS, HOWLS, PELS/AALS. OR OTHER ADVANCED

TARGETING/C³ SYSTEMS.

OPERATE IN FORWARD OR DISPERSED AREA DEFENSE MODE WHERE OTHER COMBAT ELEMENTS

WOULD NOT BE ASSOCIATED OR NEARBY TARGETS.

OPERATE IN "CUT OFF" MODE WITH NO SOPHISTICATED TARGETING OR C³ LINKS.

USE TO EXPAND DEFENSIVE FRONT. PREVENT END RUNS OR FLANKING.

OPERATE WITH OR WITHOUT LONG RANGE STRIKE (SPEARHEAD) OR AIR DEFENSE (HALT) SUPPORT.

- **ALLOW RAPID BUILD-UP AND STRATEGIC MOBILITY.**

OTHER CHARACTERISTICS OF A "SSAM - X" FORCE

- MODULAR—CAN MIX WITH "DAD" AND OTHER "HITEX" FORCES TO MEET THREAT.
- IMPROVED NBC SURVIVAL FOR ALL SYSTEMS.
- MINIMUM TARGET SIGNATURE FOR ALL SYSTEMS.
- AT LEAST A 50KM CONVENTIONAL AND TNW STRIKE RANGE.
- BOTH ANTI-AIR AND ANTI-MISSILE DEFENSE CAPABILITY.
- VIRTUALLY NO REGULAR INFANTRY—USCS "DAD."
- QUICK DISPERSAL FOR TNW; CONCENTRATION FOR CONVENTIONAL WAR.
- STRESS ENDURANCE AND RELIABILITY IN FIELD OPERATIONS.
- MODULAR RESUPPLY; SMART SYSTEMS MAKE UP FOR AMMUNITION NUMBERS. HAS SPECIAL SUPPLY VEHICLES TO MINIMIZE TAIL.
- EVOLVES ON COST BASIS—GET EACH TECHNOLOGY ADVANCE ONLY AFTER PROVEN COST, MANPOWER, O&M, OR SUPPORT SAVING.

SSAM -X KEY ADVANCES IN WEAPONS TECHNOLOGY

SYSTEM	CAPABILITY
A. FUTURE TANK	ADVANCED XM-1 TYPE SYSTEM.
B. 35 TON COMBAT VEHICLE/LWFV	LIGHTER WEIGHT SYSTEM WITH ADVANCED FIRE CONTROL. SUPERIOR CAPABILITY TO EXISTING TANK.
C. MATAADS	MECH INF. FIGHTING VEHICLE WITH ADVANCED FIRE CONTROL, GUN/MISSILE CAPABLE OF KILLING TANKS, OTHER AFVs, HELICOPTERS, AND AIRCRAFT.
D. CLGP/SCATTERABLE MINES/HOWLS	IMPROVED ARTILLERY/MRL WITH PGM ACCURACY, ANTI-TANK BARRIER CAPABILITY AND "DIRECT FIRE" TARGET ACQUISITION ACCURACY.
E. ATTACK HELICOPTER	ATGM HELICOPTER WITH ADVANCED FIRE CONTROL, STAND-OFF RANGE, LAUNCH AND LEAVE AND AWX CAPABILITY.
F. SSAM-X	COMBINED ATBM, SAM AND SSM WITH TNW AND CONVENTIONAL CAPABILITY AND SMART WAR HEAD.

SSAM - X KEY ADVANCES IN COMBAT MANAGEMENT CAPABILITY AND TECHNOLOGY

- **HOWLS TYPE TARGET ACQUISITION AND DAMAGE ASSESSMENT CAPABILITY.**
- **SECURE, MINIMUM EMISSION, COMMUNICATIONS.**
- **SMART COMMUNICATIONS: IDENTIFIES LOSS OF LINK, WHERE SYSTEMS ARE.**
- **ADVANCED BATTLEFIELD NAVIGATION SYSTEMS.**
- **ADVANCED FORCE AND UNIT-WIDE FIRE ALLOCATION PLANNING AIDS.**
- **CAPABILITY TO USE EMITTER LOCATORS.**
- **TNW RESISTANT SYSTEMS.**
- **REAL TIME SENSOR AND RPV DATA INPUTS AND PROCESSING.**
- **"SENSE" LINK TO "DAD" AND "SPEARHEAD" UNITS.**

SSAM - X

ISSUES IN DETERMINING THE SYSTEM CAPABILITY OF THE MISSILE

- EASY TO POSTULATE NEW TECHNOLOGY; ISSUE IS WHETHER CAN MAKE PRACTICAL.
- TOO OFTEN "HITEX" CONCEPTS FAIL TO PROVIDE SUCH ANALYTIC JUSTIFICATION.
- FOLLOWING SLIDES ILLUSTRATE KIND OF WORK THAT NEEDS TO BE DONE.

SSAM - X MAJOR ISSUES TO BE ADDRESSED

- **VULNERABILITY OF SSAM-X TO CONVENTIONAL AND NUCLEAR ATTACK.**
- **CAPABILITY IN MULTI-MISSION ROLES.**
- **COST.**
- **TECHNOLOGICAL RISK.**
- **MINIMIZING O&M AND MANPOWER BURDEN.**
- **CREATING EXPEDITIONARY OR STRATEGIC LIFT REINFORCEMENT FORCE UNIT CONFIGURATION.**
- **LINKAGE TO TARGETING AND C³ SYSTEMS. ABILITY TO OPERATE IF THESE LINKS FAIL.**
- **CONFIGURATION FOR INDEPENDENT UNIT AND DISPERSED AREA DEFENSE REGIMENT FOR NATO-TYPE COMBAT.**

SSAM - X

VULNERABILITY ISSUES

- SSAM-X TARGET SIGNATURE. CAN SSAM-X "BLEND IN" TO AVOID SPECIFIC SYSTEM IDENTIFICATION. CAN SECURE C³ LINKS BE DEVELOPED THAT DO NOT PROVIDE EMITTER LOCATION CAPABILITY TO ENEMY. COULD A SSAM-X VEHICLE BE CAMOUFLAGED TO PREVENT IR/FLIR/TIZEO, ETC. IDENTIFICATION.
- HOW SHOULD SSAM-X UNITS GO INTO DISPERSED MODE. DISPERSE OVER 10 KT 200 RAD AREA? 100 KT 200 RAD AREA? 300 KT RAD AREA?
- WHAT REACTION TIME SHOULD SSAM-X MOBILITY FORCE ON ENEMY?
- WHAT SSAM-X SELF DEFENSE CAPABILITY IS REQUIRED AGAINST ATTACKING FROGS, SCUD, MRBM/IRBM, AND AIRCRAFT WITH ASM/PGM?
- COMPARATIVE EXCHANGE RATIO IN DUELING WITH ARTILLERY, FROG, SCUD, MRBM/IRBM UNITS (SSAM-Xs SURVIVING VS. INCOMING MRBM/IRBM DESTROYED, AND AIRCRAFT WITH ASMs).
- OPERATIONAL FIELD LIFE:
 - MTBF IN CROSS COUNTRY AND ROAD OPERATIONS?
 - OPERATING CAPABILITY AND ENDURANCE WITH LOC AND O&M FACILITIES OPERATING?
 - WITHOUT LOC AND O&M FACILITIES OPERATING?

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SSAM - X

ISSUES IN DETERMINING CAPABILITY IN MULTI-MISSION ROLES

- ABILITY TO COMBINE AIR DEFENSE, SSM, AND MISSILE DEFENSE IN ONE UNIT (OR SYSTEM).
- GUIDANCE AND WARHEAD OPTIONS AND COST.
- CONVENTIONAL AND NUCLEAR WARHEAD/GUIDANCE PACKAGE MOST COST-EFFECTIVE FOR:
 - ANTI-ARMOR MISSION
 - ANTI-FROG/ARTY MISSION
 - ANTI-HQ/C³ UNIT MISSION
- REQUIRED ENDURANCE, SUSTAINING, AND SUPPORT CAPABILITY.
- IMPACT OF MICROWAVE GUIDANCE OPTIONS.
- ABILITY TO SWITCH FROM CONVENTIONAL TO TNW MODE.
- INTERFACE WITH ASSOCIATED SYSTEMS:
 - ARMOR AND INFANTRY
 - CONVENTIONAL OR TNW ARTILLERY
 - LANCE AND HJ
 - FBA/FBS
 - PERSHING
 - SSBMs
- SECURE RELEASE AND C³ CAPABILITY

SSAM - X COST ISSUES

• COMPARATIVE COST DATA

LAUNCHER/ TUBE/ACFT	MISSILE/ ROUND/ ASM	BTM SET SQM	10 YEAR PER LAUNCHER IN UNIT	PER UNIT
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• SSAM-X

LOW COST CONFIG.
HIGH COST CONFIG.

HAWK
155mm
203mm
LANCE
HJ
PERSHING
F-4
F-111

- ABOVE COSTS PER NUCLEAR ROUND DELIVERED.
- COST OPTIONS FOR DIFFERENT SSAM-X CONFIGURATIONS OR MIXES OF MISSION CAPABILITY.
- BREAK OUT OF O&M COSTS.
- DIFFERENT MANNING LEVEL/COST OPTIONS.
- DIFFERENT ENDURANCE OR SUSTAINING CAPABILITY/COST OPTIONS.

SSAM - X

ISSUES AFFECTING TECHNOLOGICAL RISK

- **RISK IN WARHEAD OPTIONS.**
- **RISK IN GUIDANCE OPTIONS.**
- **RISKS AFFECTING COST ESCALATION.**
- **RISKS IN MULTI-MISSION CAPABILITY.**
- **RISKS IN LAUNCHER/MOBILITY EQUIPMENT.**
- **RISKS IN MISSILE DESIGN.**
- **RISKS IN TARGETING/C³ LINK DESIGN.**

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SSAM - X

ISSUES IN MINIMIZING O&M AND MANPOWER BURDEN

- COMPARATIVE SSAM-X, HAWK, 155mm, 8", HJ, LANCE, F-4, AND A-10 O&M COSTS ON ANNUAL AND 10 YEAR BASIS.
- TRADE-OFFS BETWEEN INVESTMENT IN LOW MANPOWER, MAINTENANCE FREE, EQUIPMENT, AND O&M COSTS.
- POSSIBLE TRADE-OFFS IN TERMS OF CUTS IN FORCES SSAM-X REPLACES.
 - 10% MANPOWER SAVING OPTION?
 - 30% MANPOWER SAVING OPTION?
- OPTIONS FOR CUTTING LOGISTIC TAIL.
 - VERTICAL LAUNCH NEST VEHICLE USING TRACK BED AND 10-X? MISSILES.
- OPTIONS FOR REDUCING TRAINING? MOS LEVELS?

SSAM - X

ISSUES IN CREATING EXPEDITIONARY FORCE/STRATEGIC LIFT OPTION

- **SAMPLE MULTI-MISSION UNIT CONFIGURATION.**
- **ABILITY TO AIR/SEA LIFT.**
- **OVER-THE-BEACH CAPABILITY.**
- **SECURE C³ ON RELEASE FROM CONUS.**
- **ABILITY TO WORK WITH THIRD WORLD FORCES. INTEROPERABILITY.**
- **BARRIER/DELAYING OPTIONS.**
- **ABILITY TO OPERATE WITHOUT SOPHISTICATED AC&W AND TARGETING AIDS.**

SSAM - X

ISSUES IN LINKING SSAM - X TO TARGETING AND C³ SYSTEMS

- INTERFACE WITH HOWLS, REMBASS, TACFIRE.
- INTERFACE WITH AALS, PELS, AGETELIS.
- LINKAGE TO OTHER FIRE UNITS.
- COLLATERAL DAMAGE CONTROL PROBLEM.
- CONVENTIONAL/TNW I.F.F. PROBLEM.
- ABILITY TO OPERATE WITHOUT SOPHISTICATED SYSTEMS.
- FAC/FBA/FBS INTERFACE.
- C³/RELEASE PROBLEM.

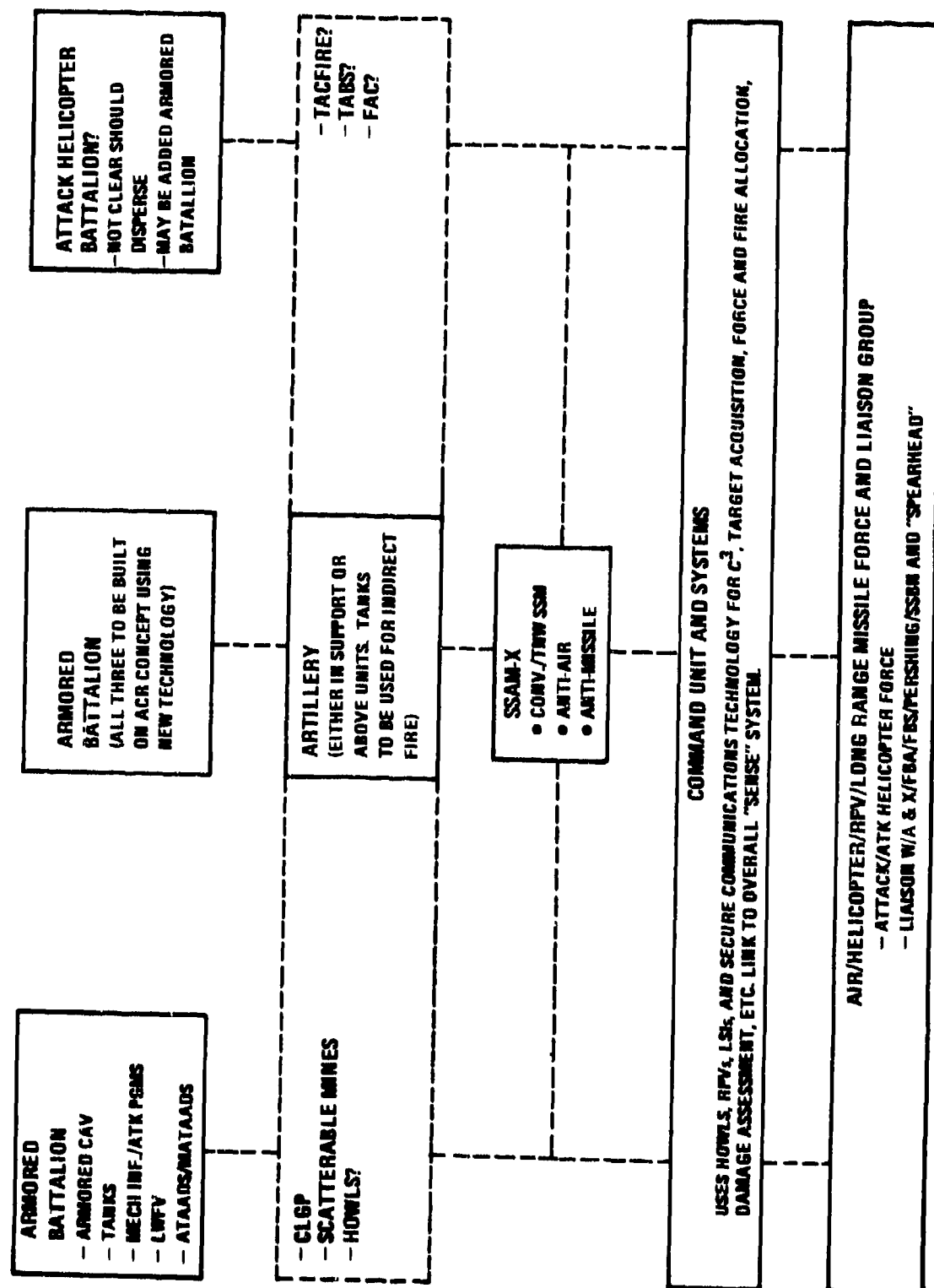
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SSAM - X

ISSUES IN DETERMINING CONFIGURATION FOR INDEPENDENT UNIT AND DISPERSED AREA DEFENSE "REGIMENT" FOR NATO COMBAT

- OPTIONS FOR CREATING A DISPERSED AREA DEFENSE REGIMENT.
 - SIZE OF SSAM-X FORCE.
 - ROLE OF ATAADS-TYPE DEFENSE UNIT.
 - ROLE OF ANTI-TANK/MECH INFANTRY.
 - ROLE OF ARTY VALUE OF SCATTERABLE MINES/GLGP.
 - ARMORED CAVALRY/TANK ELEMENT.
 - C³/FORCE-FIRE ALLOCATION-TARGETING UNIT.
- IS REGIMENT LARGEST UNIT CAN GIVE DUAL CAPABILITY SURVIVAL? IS NORMAL BRIGADE OR DIVISION TOO BIG?
- SHOULD A SSAM-X UNIT HAVE SOME INTEGRAL ANTI-ARMOR DEFENSE OF BREAK AWAY CAPABILITY?
- CAN SSAM-X BE GIVEN THE TARGET ACQUISITION CAPABILITY TO OPERATE ALONE IF LINKS TO OTHER UNITS FAIL?
- HOW WOULD SUCH UNITS OPERATE IN DIFFERENT MODES OF COMBAT?
 - FORWARD CONVENTIONAL/TNW STATIC DEFENSE AGAINST ARMORED ATTACK.
 - IN "ELASTIC" OR SCREENING DEFENSE IN ARMORED ATTACK.
 - IN "POROUS" OR DISPERSED COMBAT.
 - IN "DISORGANIZED" BATTLEFIELD.
 - REINFORCING ACROSS DIFFERENT CORPS SECTORS.
 - IN STEMMING A BREAKTHROUGH USING CONVENTIONAL RNW OPTIONS.
 - IF ENEMY INITIATED TNW COMBAT AT START OF CONFLICT OR AFTER CONVENTIONAL ATTRITION.
- COULD EQUAL OR BETTER CAPABILITY BE PROVIDED RELATIVE TO CURRENT ACR/ARMORED BRIGADE SLICE AFTER A:
 - 10% MANPOWER CUT.
 - 20% MANPOWER CUT.
 - 30% MANPOWER CUT.

ILLUSTRATIVE SSAM - X "HITEX" REGIMENT



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"SPEARHEAD"

ADVANCED TECHNOLOGY

LONG RANGE

STRIKE/ATTACK

FORCE

19 AUGUST 1974

D/AHC

F-1

"SPEARHEAD"

TACTICAL MISSIONS

- ASSIST IN HALTING ARMORED BREAKTHROUGHS AND PENETRATIONS
- REINFORCE GROUND COMBAT UNITS IN "THIN" SECTORS OR FACING MAIN LINES OF ATTACK
- ATTACK, INTERDICT, OR INHIBIT ENEMY AIR BASES, MISSILE SITES, REAR AREA FACILITIES, AND REINFORCING ECHELONS
- DETER LONG RANGE NUCLEAR STRIKES; CONDUCT LONG RANGE NUCLEAR WARFARE
- PROVIDE DUAL CAPABLE "COUNTERVALUE" TARGETING
- LONG RANGE "DEMOLITION" INTERDICTION OF ROAD AND RAIL SYSTEMS
- EXPEDITIONARY FORCE

"SPEARHEAD"

SOME MISSION ISSUES

- MISSION MAY NOT BE "KILLING":
WANT FORCE THAT CAN DELAY ENEMY ADVANCE, INHIBIT OPERATIONS AS WELL AS KILL. THIS MAY BE MUCH CHEAPER.
- MUST BE TAILORED TO CONTROL ESCALATION:
HIGHEST RISK FORCE IN TERMS OF STRATEGIC OR NUCLEAR ESCALATION.
- NOT CLEAR WANT TO KILL TANKS:
 - MAY BE MOST EFFECTIVE IN LAYING DOWN "BARRIERS" TO MOVEMENT. CUTTING PATHS OF ADVANCE.
 - NEED TO RETHINK VALUE OF REAR AREA TARGETS. PARTICULARLY AMMO, POL, REINFORCEMENT TRANSIT LINKS.
- NEED TARGET ANALYSIS OF HOW WARSAW PACT ARMIES AND FRONTS BUILD-UP:
WANT TO KILL FORCE; NOT FORWARD BATTALIONS.
- TRADE-OFF WITH DAD AND SSAM-X
- CAN SPEARHEAD ALSO DO HALT MISSION

"SPEARHEAD"

CURRENTLY PLANNED DELIVERY SYSTEMS:

NEW MISSIONS

- B-52, B-1 AND F-111:

PRECISE, SURVIVABLE, HIGH VOLUME DELIVERY OF SCATTERABLE MINES OR SENSOR WEAPONS AGAINST KNOWN LINE OF ENEMY ATTACK.

- A-10 AND ATGM HELICOPTERS:

EQUIP WITH "NEXT GENERATION" ASMs, SUITABLE "SENSE" C³ AND TARGETING, AND CONCENTRATE AS ANTI-BREAKTHROUGH STRIKE FORCE.

- CONVENTIONAL STRIKE PLAN:

EQUIP AND TARGET FBA AIRCRAFT WITH "STRIKE" PLAN DESIGNED TO ALLOW IMMEDIATE INTERDICTION OF ALL KEY BRIDGES, RAIL LINKS, ETC. IN AREA WHERE MAJOR LINE OF ATTACK IS LOCATED. REQUIRES NEW SOFTWARE TECHNOLOGY

- SSBN "COUNTERVALUE" PLAN:

DEVELOP SSBN OPTION, AND ANNOUNCE TO WARSAW PACT, DESIGNED TO DETER SOVIET MRBM/IRBM OR OTHER NUCLEAR ATTACK ON NATO AIR BASES OR STORAGE SITES.

- PERSHING II:

MAY PROVIDE LOW PAYLOAD SMART SYSTEM FOR E-P AND OTHER ATTACKS ON THREAT AIR BASES AND KEY REAR AREA TARGETS.

"SPEARHEAD"

SOME MAJOR ADVANCED TECHNOLOGY OPTIONS

- LONG RANGE SMART "SSMS":
NEW PROPELLANT AND GUIDANCE TECHNOLOGY MAY ALLOW DEVELOPMENT OF "CHEAP" DUAL CAPABLE SSMS.
- SCATTERABLE MINES, SMART WARHEADS, SENSOR WEAPONS:
PROVIDE "TNW" EFFECTIVENESS WITH CONVENTIONAL WARHEADS. EARTH PENETRATOR "IN-BETWEEN."
- LONG RANGE MULTIPLE ROCKET LAUNCHERS:
SPIN STABILIZATION AND BATTLEFIELD NAVIGATION SYSTEMS MIGHT ALLOW USE OF "TRAILER TRUCK" MRL PODS TO DELIVER MASSIVE AMOUNTS OF DISPERSED MINES AT 40-60 KM RANGES.
- SSBNS:
MIRVS PLUS CORRELATION OR OTHER "SMART" WARHEADS MAY ALLOW TO REPLACE 400 NM & FBS AIRCRAFT.
- "747" MASSIVE DELIVERY:
USE SUPERLIFT AIRCRAFT - POSSIBLY BEFORE CONFLICT AND/OR FROM CONUS - TO LAY MASSIVE MINE OR SENSOR WARHEAD BARRIER OR DELIVER EXTREMELY HIGH VOLUME OF ASMs ON MAIN LINE OF ENEMY ARMORED ADVANCE.
- RPVS:
USE TO LOCATE AND ATTACK ARMORED FORCES.

"SPEARHEAD"

EFFICIENCY: ARE MORE OR BETTER DELIVERY SYSTEMS NEEDED?

- BEAN COUNTS BASED ON "FALSE" PREMISE:
BOTH SIDES WILL HAVE NEARLY EQUAL CAPABILITY IN C3, TARGET ACQUISITION, FORCE ALLOCATION. FORCE RATIO IS EFFECTIVE STRIKE SORTIES DELIVERED; NOT DELIVERY SYSTEM NUMBERS.
- ASMs, PGMS, SCATTERABLE MINES, ETC. ONE WAY OF IMPROVING EFFICIENCY
- "SENSE" TYPE SYSTEM IS ANOTHER:
IMPROVED TARGETING, MAIN LINE OF ADVANCE DETECTION, FORCE ALLOCATION MANAGEMENT, DAMAGE ASSESSMENT, ALSO INCREASE EFFICIENCY.
- SURVIVABILITY:
EFFECTIVE SORTIES OVER TIME; SURVIVABILITY ALSO INCREASES EFFICIENCY.
- MAINTENANCE, REPAIR, SUPPLY, AND TURN AROUND:
IMPROVED SLAM "TAIL" IS ALSO A POSSIBLE WAY TO INCREASE EFFICIENCY AND FORCE EFFECTIVENESS.
- MISSION EFFECTIVENESS:
IMPROVED SOFTWARE AND ANALYTIC METHODOLOGY MAY ALLOW MUCH MORE EFFECTIVE TARGETING AT LOW COST. E.G., TARGET "BREAKTHROUGH" LINE OF ADVANCE FROM START, AND NOT ENTIRE FRONT.
- MORAL: "MORE" MAY BE NEITHER BETTER, NOR MORE RESOURCE EFFECTIVE.

"SPEARHEAD"

SURVIVABILITY

- OTHER FORCES DEFEND SELVES OR ARE DISPERSED
- NEED SURVIVABILITY TO:
 - DETER THREAT ESCALATION AND REDUCE INCENTIVE FOR PRE-EMPTION.
 - PROVIDE MAXIMUM CONTROL OVER OWN ESCALATION.
- TECHNOLOGY OFFERS SIGNIFICANT OPTIONS:
 - SHIFT TO SSBNS FOR PART OF FORCE: ONLY PART NEEDS TO BE SURVIVABLE.
 - SHIFT TO SSMs WITH MAXIMUM MOBILITY AND DISPERSION; MINIMAL REACTION TIME.
 - "SENSE" CONTROL OVER USE.
 - ATM DEFENSE.
 - FUTURE AIR OPERATION FROM AUTOBAHNS, CIVIL AIR BASE WITH MINIMAL TAIL.
 - COMBINE "HALT" CAPABILITY IN SPEARHEAD AIRCRAFT WITH NEW AVIONICS AND MISSILE TECHNOLOGY.

"HALT"

**ADVANCED TECHNOLOGY
AIR AND MISSILE
DEFENSE SYSTEM**

**19 AUGUST 1974
d/AHC**

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IS SUCH A FORCE REQUIRED?

ISSUE NO. 1: CAN OTHER FORCES PERFORM THE ROLE?
ARE OTHER MISSIONS MORE RESOURCE
EFFECTIVE?

ISSUE NO. 2: WHAT IS THE FUTURE ROLE OF AIRCRAFT
AND AIRBORNE SYSTEMS?

ISSUE NO. 3: FUTURE ROLE OF THE LONG RANGE SAM

ISSUE NO. 4: ROLE OF DEFENSE IN "AIR SUPREMACY"

"HALT"

ISSUE NO. 1: CAN OTHER FORCES PERFORM THE ROLE?
ARE OTHER MISSIONS MORE RESOURCE EFFECTIVE?

- SHOULD RESOURCES BE CONCENTRATED ON STOPPING ARMORED ATTACKS?

IS AN ADVANCED AIR DEFENSE FORCE NECESSARY?

- CAN DAD, SSAM X, SPEARHEAD PROVIDE THE NECESSARY COVERAGE?

- WOULD AN ELECTRONIC WARFARE DEFENSE PROVIDE THE REQUIRED SUPPLEMENTAL CAPABILITY?

WOULD A SYSTEM DEGRADING WARSAW PACT GGI, AC&W, AND ADVANCED AVIONICS BE A LOW COST COUNTER TO A SPECIALIZED PACT FORCE?

"HALT"

ISSUE NO. 2: WHAT IS THE FUTURE ROLE OF AIRCRAFT AND AIRBORNE SYSTEMS?

- INTERCEPT VS. "DOGFIGHT":

IS THERE A TRADE-OFF? HOW CAPABLE CAN FUTURE
AVIONICS AND AAMS BE?

- CAN SPECIALIZED AIR DEFENSE AIRCRAFT BE AVOIDED?

CAN NEW LSI AVIONICS AND PGMs PRODUCE A TRUE
MULTI-ROLE FIGHTER? CAN AAMs AND ASMs BE COMBINED?

- CAN "AIR DEFENSE" RPVs REPLACE MANNED AIRCRAFT?

- CAN A "747" DEFENSE AIRCRAFT COMBINING ADVANCE
AVIONICS, AWACS, AND PHOENIX REPLACE FIGHTERS?

COULD IT FLY FROM CONUS? SHOULD THE NUCLEAR
OR SUPER ENDURANCE TURBO PROB BE RECON-
SIDERED?

"HALT"

ISSUE NO. 3: FUTURE ROLE OF THE LONG RANGE SAM

- COMBINED VS. SPECIALIZED FORCE:
IS DISPERSION IN DAD AND SSAM-X ENOUGH?
- POINT DEFENSE VS. AREA COVERAGE:
WHAT CAN A FUTURE INVESTMENT IN SAM CAPABILITIES DO MOST COST EFFECTIVELY?
- MRBM/IRBM/SSM DEFENSE:
CAN SAMs PROTECT NATO STRIKE BASES? DETER ATTACKS? WHAT OTHER MISSILE DEFENSE ROLE IS REQUIRED?
- TRADE-OFF WITH AIRCRAFT:
WHAT FORCE AND MISSION MIX IS REQUIRED?
- ECM/ECCM/EW/NADGE:
HOW SHOULD "SENSE" BE LINKED IN; WHAT SPECIAL SYSTEM IS REQUIRED?
CAN AN EXPEDITIONARY C3 SYSTEM BE DEVELOPED?
- ECM/ECCM/EW/NADGE:
HOW SHOULD "SENSE" BE LINKED IN; WHAT SPECIAL SYSTEM IS REQUIRED?

"HALT"

ISSUE NO. 4: ROLE OF DEFENSE IN "AIR SUPREMACY"

- NEED TO RETHINK LONG TERM IMPACT OF SSMS, IRBMS, MRBMS:
NO LONGER HAVE EVEN PROTECTION OF ESCALATION BARRIER. CONVENTIONAL WARHEADS CAN KILL BOTH LAND TARGETS AND AIR BASES.
- MAY NOT NEED "AIR SUPREMACY":
IF CAN PROTECT AIR BASES, ATTACK AIRCRAFT, SSMS, AND GROUND FORCES WITH OTHER FORCES OR OWN CAPABILITIES.
- RETHINK OFFENSE:
LONG RANGE "SMART" SSMS/ASMS, EARTH PENETRATORS, SCATTERABLE MINES, AND IMPROVED INTELLIGENCE SYSTEMS MAY OFFER WAY TO SUPPRESS ANY LARGE SCALE WARSAW PACT AIR FORCE WHILE PROVIDING "DUAL CAPABILITY" AGAINST GROUND AND SSM UNITS.
- MAJOR POTENTIAL RESOURCE SAVING:
NATO NOW HANDLES BY FAILURE TO MODERNIZE OR SYSTEMATIZE. TECHNOLOGY GETTING FAR MORE EXPENSIVE. MAY BE ONE MISSION CAN AFFORD TO GIVE UP.

"SENSE"

THEATER-WIDE

FORCE ALLOCATION AND FORCE

MANAGEMENT SYSTEM

WHY "SENSE" IS NEEDED

- FORCE ALLOCATION IS KEY PROBLEM IN EFFECTIVE USE OF FORCES IN COMBAT: MUST IDENTIFY MAJOR LINES OF ATTACK AND BRING NATO LAND AND AIR RESOURCES TO BEAR AS EFFICIENTLY AS POSSIBLE. MUST ACHIEVE MAXIMUM ECONOMY OF FORCE.
- OTHER SYSTEMS SUPPORT EFFICIENT FORCE ALLOCATION: TARGET ACQUISITION AND IDENTIFICATION SYSTEMS, EMITTER LOCATORS, FIRE POWER MANAGEMENT SYSTEMS, GCI AND AC&W SYSTEMS, DAMAGE ASSESSORS, SENSORS, EW ECM ECCM SYSTEMS, RPVs, INTELLIGENCE AIDS, AND COMMUNICATION SYSTEMS ALL HAVE FORCE ALLOCATION AS THEIR ULTIMATE PURPOSE.
- MANY DISPERSE PIECES OF HARDWARE NOW EXIST OR ARE UNDER DEVELOPMENT. THEY ARE "NON" OR POORLY INTEGRATED AND INTERFACE WITH OTHER "SYSTEMS" CONSISTING OF MEN AND RADIOS OR TELETYPES
- THE "SYSTEM" WHICH EXISTS HAS MANY CONFLICTING LEVELS OF SUBOPTIMIZATION. IT IS NOT TAILORED FOR OVERALL EFFICIENCY IN FORCE ALLOCATION OR TO THE THREAT IT MUST MEET.
- THERE ARE SERIOUS NATIONAL, REGIONAL, SERVICE, BRANCH, AND ROLE MISSION INCOMPATIBILITIES THROUGHOUT THE EXISTING "SYSTEM."
- COMMUNICATION IS CONFUSED WITH INFORMATION WHICH IS CONFUSED WITH DATA MANAGEMENT. THE "SYSTEM" NOW TENDS TO SATURATE ALL LEVELS AND ECHELONS OF COMMAND WITHOUT CLEAR GOALS
- CURRENT SYSTEMS FOCUS ON TODAY AND KILLING AT BATTLEFIELD OR AIR ENCOUNTER LEVEL. TOO LITTLE EFFORT MADE TO SUPPORT EFFECTIVE USE OF RESERVES, LONG TERM MANAGEMENT OF ATTRITION, MANEUVER, RECOVERY AND REPAIR CAPABILITIES, AND SUPPLY.

"SENSE": REQUIRED CHARACTERISTICS

- ABILITY TO TAILOR TO THREAT.
- FLEXIBILITY IN ADAPTING TO NEW TACTICS AND SCENARIOS IN EACH SIDE'S USE OF FORCES.
- POLITICAL CONTROL OF ESCALATION; "CRISIS MANAGEMENT" CAPABILITY.
- SURVIVABILITY: MINIMAL CRITICAL LINKS, MINIMAL EMISSION AND TARGETABILITY, RESISTANCE TO TNW EFFECTS, ETC.
- MINIMAL COST; MAXIMUM USE OF EXISTING SYSTEMS.
- NETTING AND INTERACTION ACROSS CURRENT ORGANIZATIONAL, SYSTEM, AND COMMAND BOUNDARIES.
- INFORMATION MANAGEMENT AND SELECTIVITY. SUPPORT CONTINUING FORCE ALLOCATION; NOT MAXIMUM DATA FLOW.
- MODULAR SOPHISTICATION: ALLOW WORLD-WIDE COMPONENT DESIGN-TAILOR MIX TO MEET SPECIFIC CONTINGENCIES. ALLOW UPGRADING BY SUBELEMENT.
- MATRIX CONCEPT: NEITHER "VERTICAL" OR "HORIZONTAL" - LINK DISPERSE ELEMENTS, FORCES, ECHELONS OF COMMAND, BATTLEFIELD TO CONUS IN "MESHED" SYSTEM.
- AUTOMATED LEARNING CAPABILITY: SYSTEM SHOULD WARN AND INFORM OF MAJOR CHANGES IN ENEMY BEHAVIOR - FAILURES TO USE EFFECTIVELY.
- SUPPLY AND RESERVE MANAGEMENT: PROVIDE CAPABILITY TO PLAN AHEAD. USE RESERVES, BUILD-UP FORCES, SUPPLIES, RECOVERED AND REPAIRED SYSTEMS EFFICIENTLY.

"SENSE"

NEW TECHNOLOGIES AVAILABLE

- LSI—"MINI-LOGIC," "SMART COMMUNICATORS."
- SYSTEM NETTING.
- INTERACTIVE COMPUTER-COMMUNICATION-FACTOR ANALYSIS SYSTEMS.
- SECURE COMMUNICATIONS.
- NON-EMITTING COMMUNICATORS:
OPTICAL FIBERS; LAND LINE INTERCEPTORS, ETC.
- SUB-OPTIMIZATION ANALYSIS.
- HOWLS, TACFIRE, CCIS, NADGE II, AALS-PELS-
AGETELIS, AWACS, SATELLITES, SENSORS, RPVs,
BATTLEFIELD NAVIGATION SYSTEMS, INTELLIGENCE
SYSTEMS, RADARS, ETC.

"SENSE"

MAJOR ISSUES

- HAVE TO RE-THINK THE PROBLEM OF INFORMATION AND COMMUNICATION. FAR FROM CLEAR WHAT SYSTEM SHOULD BE.
- KEY ISSUE IN ALMOST EVERY CASE WILL BE WHERE SYSTEM IMPROVEMENT SHOULD STOP.
- OTHER ISSUES ARE:
 - HOW MUCH INTEGRATION IS POSSIBLE AND DESIRABLE?
 - HOW MUCH LINKAGE IS POSSIBLE BETWEEN U.S. AND ALLIES?
 - VULNERABILITY AND SURVIVABILITY?
 - HOW TO MEASURE COST-EFFECTIVENESS TRADE-OFFS?
 - PRIORITIES FOR SUB-OPTIMIZATION:
 - CONCENTRATION ANTI-ARMOR FORCES;
 - COORDINATING AIR/SSM/RPV/HELICOPTER ATTACKS?

"SLAM"

**ADVANCED TECHNOLOGY
REINFORCEMENT, SUPPORT AND
SUPPLY SYSTEM**

THE "SLAM" CONCEPT

- RETHINK THE PROBLEM OF BUILD-UP, REINFORCEMENT, SUPPLY, WAR RESERVES, AND O&M.
- REGARD AS "POOL" OR "SYSTEM" OF RESOURCES TO BUILD-UP COMBAT CAPABILITY AT FRONT.
- GOAL IS TO TRY TO OPTIMIZE TOTAL KILLING AND MANEUVER CAPABILITY.
 - SUSTAINING CAPABILITY SHOULD NOT BE SEEN IN TERMS OF DAYS, BUT ABILITY TO KILL WITH SURVIVING FORCES.
 - FUNCTION OF RATE OF KILLING, OWN ATTRITION, DEFENDER/ATTACKER FORCE RATIO.
- O&M, REPAIR, AND RECOVERY CAPABILITIES UNDERVALUED IN TERMS OF ABILITY TO SUSTAIN KILLING AND MANEUVER CAPABILITY.
- CREATE ARTIFICIAL BARRIERS TO EFFICIENT USE OF RESOURCES BY NOT ANALYZING AS BROAD POOL OF RESOURCES; INSTEAD "FREEZE" ON UNIT INTEGRITY, SUPPORT SLICES, DAYS OF STOCKS, ETC.
- INVOLVES AS MUCH AS 70% OF U.S. FORCES AND DEFENSE EXPENDITURES.
- U.S. MAY BE POOR IN TERMS OF TOTAL BUDGET CONSTRAINTS AND MANPOWER; BUT, RICH IN TERMS OF ECONOMIES POSSIBLE IN MORE EFFECTIVE USE OF "SLAM" RESOURCES.

"SLAM"

INTERACTS WITH FOUR MAJOR TYPES OF FORCES

- FORWARD COMBAT FORCES.
- RAPID REACTION COMBAT FORCES AND DELIVERY SYSTEMS.
- PREPOSITIONED "SLAM" INCREMENTS TO MANEUVER AND KILLING CAPABILITIES.
- CONUS BASED "SLAM" INCREMENTS AND DELIVERY SYSTEMS.
- NOW TECHNOLOGY OFFERS MAJOR OPTIONS TO IMPROVE EACH TYPE OF FORCE.
- PROBLEM FOR TECHNOLOGY IS WHAT MIX AND WHAT TRADE-OFFS ARE REQUIRED.

"SLAM"

FORWARD COMBAT FORCES

- DAD, SSAM-X, SENSE, HALT AND SPEARHEAD CAN BE DESIGNED TO USE SMART KILLING WEAPONS WITH HIGH MANEUVER CAPABILITY.
- SMART WEAPONS, MORE EFFICIENT PROPELLANTS AND WARHEADS, AND MOBILITY CAN MINIMIZE SUPPLY DRAIN AND NEED FOR NUMBERS AS SUBSTITUTE FOR MOBILITY. ALLOWS RESOURCE SHIFTS OUT OF "SLAM" TO PAY FOR OTHER "HITEX" FORCES.
- ALSO DESIGN COMBAT FORCES FOR MAXIMUM OPERATING ENDURANCE, MINIMAL MAINTENANCE, MINIMAL ENGINEERING AND SERVICE SUPPORT. MAY BE MORE IMPORTANT THAN IMPROVED "KILLING" CAPABILITY.
- NEED TO RE-THINK IMPORTANCE OF REPAIR AND RECOVERY CAPABILITY. NEED NOW DOCTRINE OF MODULAR MAINTENANCE, PLUG IN REPAIR OR JUNK, SELF DIAGNOSIS. ALREADY SEE BEGINNINGS IN NEW FIGHTERS AND IN COMMERCIAL VEHICLES.
- REPLACEMENT DOCTRINE IS CRITICAL PROBLEM. MUST RE-THINK WHOLE CONCEPT OF UNIT INTEGRITY. HOW "SLAM" SHOULD COMPENSATE FOR ATTRITION.
- MUST RECOGNIZE THREAT WEAPONS WILL ALSO GET "SMARTER" AND MORE "LETHAL". QUALITY, NOT QUANTITY, MAY BE STEADILY MORE IMPORTANT.

"SLAM"

RAPID REACTION COMBAT FORCES AND DELIVERY SYSTEMS

- DAD IS KEY TO RAPID WORLD-WIDE BUILD-UP OF DEFENSIVE FORCES IN SMALL ASSAULT UNITS. CAN MOVE AS SMALL ELEMENTS - NOT DIVISIONS OR BRIGADES. CAN MOVE BY AIR OR CHOPPER LIFT FRONT ASSAULT VESSELS.
- "SSAM-X" WOULD BE DESIGNED FOR AIRLIFT IN SMALL ELEMENTS. ALL SYSTEMS WOULD BE DC-8, 707, 747 PORTABLE. COULD BUILD-UP IN REGIMENTAL OR BATTALION SIZED ELEMENTS.
- SPEARHEAD AND HALT WOULD HAVE OWN OR AIR MOBILITY. AIRCRAFT MAY OFFER UNIQUE CAPABILITY MISSILE SYSTEMS CANNOT HAVE.
- SLAM WOULD USE SENSE:
FORCES GO WHERE NEEDED IN THEATER. NOT TO FIXED BASES OR CORPS ZONES.
- MINIMAL LOGISTIC AND SUPPORT BURDEN:
DESIGN CAN SHARPLY REDUCE ADDED BURDEN ON SUPPLY AND SUPPORT. FREES LIFT TO MOVE FORCES.
- "EXPEDITIONARY" OR "ASSAULT CAPABILITY":
FORCES ALLOW RAPID TAILORING TO CONTINGENCY. REQUIRE MINIMAL AIR SUPPORT. REDUCE SEA/AIR LIFT. ALLOW MODULAR CONTAINERIZATION. CAN LIFT OVER THE BEACH - NOT FORCED TO CROSS IT.

"SLAM"

PREPOSITIONED INCREMENTS TO MANEUVER AND KILLING CAPABILITIES

- DESIGN FUTURE EQUIPMENT FOR LONG STORAGE WITH MINIMAL O&M.
- EMPHASIZE CONTAINER STORAGE. CONSIDER STANDARD CONTAINERS AND LIFT VEHICLES/HELICOPTERS/RPVs.
- ELIMINATE LOADING AND PACKAGING.
- SMARTER WEAPONS AND SMALLER VOLUME SHOULD ALLOW MORE DISPERSAL. THIS AND SHELTERING IS CRITICAL. NO MORE REAR AREA "SANCTUARIES". DO NOT NEED WHAT CANNOT SURVIVE.
- MAKE MAXIMUM USE OF CIVILIAN FACILITIES; NATO INTERDEPENDENCE AND EAR MARKING OF VEHICLES, UNITS, ETC.

"SLAM"

ISSUES IN DESIGNING "HITEX" PREPOSITIONED FORCES

- **VULNERABILITY.**
- **FUTURE RELATIVE ATTRITION OF EQUIPMENT, AMMO, AND SUPPLIES IN MORE LETHAL AND LONGER RANGE BATTLEFIELD.**
- **FUTURE AMMUNITION EXPENDITURE RATES.**
- **HOW MUCH OF THE SUPPORT FORCE CAN BE ELIMINATED; HOW MUCH HAS TO BE ELIMINATED BECAUSE OF THE VULNERABILITY OF FIXED FACILITIES.**
- **MEDICAL PROBLEM OF TNW. IMPACT OF DELAY CASUALTIES.**

"SLAM"

CONUS BASED INCREMENTS

- DIRECTLY RELATED TO PROBLEM OF WHAT PREPOSITIONED "SLAM" FORCES SHOULD BE.
- KEY IS MAXIMIZE KILLING AND MANEUVER CAPABILITY.
- NOT THE SAME AS ALTERING "TEETH TO TAIL" RATIO. IDEALLY, SHOULD SEEK TO END AN ESSENTIALLY FALSE DISTINCTION. DEAL WITH IN TERMS OF COMBAT POWER.
- MOST CRITICAL CHALLENGE FOR TECHNOLOGY IS TO COMBINE SUPPORT AND COMBAT FORCES BY GIVING HITEX COMBAT UNITS MAXIMUM INTEGRAL SUPPORT CAPABILITY.
- AUTOMATION, "SENSE", AND MODULAR SUPPLY SHOULD MINIMIZE THE SUPPORT REQUIRED.
- NEED TO REGARD BUILD-UP FORCES, WAR RESERVES, AND REPLACEMENTS AS COMMON FLEXIBLE RESOURCE POOL. USE AS CONTINGENCY REQUIRES. NEW TRAINING, C3, FORCE DESIGN, AND "SENSE" TECHNOLOGY SHOULD MAKE THIS POSSIBLE.

"SLAM"

MAJOR IMPLICATIONS

- TECHNOLOGY MAY ALLOW U.S. TO END MOST OF "TAIL TO TEETH" SEPARATION.
- CUTS IN SUPPLY AND O&M BURDEN, CAN HELP PAY FOR TECHNOLOGY.
- TECHNOLOGY ALSO ALLOWS U.S. TO RETHINK WHOLE ISSUE OF STRATEGIC MOBILITY AND REINFORCEMENT.
- ATTRITION IS KEY PROBLEM. IMPROVED KILLING POWER, RANGE, AND AREA COVERAGE CAN OFFSET SUPERIORITY OF INFERIOR FORCE.
- BUT, "SLAM" MUST COPE WITH:
 - POSSIBILITY OF EQUAL THREAT CAPABILITY.
 - WAR ON A MUCH FASTER AND MORE INTENSE TIME SCALE.
- KEY IS TO SEE AS FORCE WIDE SYSTEM. CANNOT DESCRIBE THIS IN DETAIL NOW, BUT MUST SEEK TO DEFINE AND CREATE. WILL NOT GROW BY ITSELF.